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EDITED BY

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Original Communications.

OPERATIVE INTERFERENCE IN ACUTE PERFORATIVE TYPHLITIS.*

By T. HERRING BURCHARD, A. M., M. D.,
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So gratifying has been the success that has attended the surgical evacuation of abscesses located in the right iliac fossa, that it seems surprising that some definite plan of treatment should not, ere this, have been adopted by the profession, for the relief of those unfortunate cases where the wall of the cæcum itself or its appendage is the seat of the inflammatory process, and in which ulceration, perforation, and death occur with such melancholy rapidity. In a recent and very valuable contribution to the study of perityphlitis,† reflecting the latest views of the profession on this subject, Professor Sands dismisses these rapidly fatal cases thus summarily: "My remarks," he says, "will refer only to those cases of inflammation in the neighborhood of the cæcum in which the disease is circumscribed; as those in which general peritonitis rapidly follows a perforation of the cæcum or vermiform appendix belong to a separate category, and, terminating fatally, are as yet beyond the reach of art, and possess therefore a pathological, rather than a surgical interest."

Four cases of acute perforation of the appendix have fallen under my personal observation, and, as some of these occurred contemporaneously with acute cases of perityphlitis, the opportunities for differential diagnosis between these two affections have been, I believe, exceptionally valuable. The results of this experience I desire to present for your consideration, with the sincere desire that a free discussion may elicit new points of interest, and throw additional light upon the diagnosis and treatment of this obscure and fatal disease.

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* Read before the New York Academy of Medicine, Nov. 18, 1880.

† "Ann. of the Anat. and Surg. Soc.," ii, 8, 1880.

Typhlitis presents itself clinically in an acute and a chronic form. In the chronic variety, we have a pathological condition lying dormant, perhaps, for years, but manifesting itself at irregular intervals and under special perturbating influences in acute exacerbations. These exacerbations follow the general course of an acute attack. The pathological changes in this condition vary according to the duration of the attack and the intensity of the inflammation. There is catarrh of the cæcum, with thickening and generally partial ulceration of its coats. If the typhlitis has been consequent upon impaction of fæcal or other concretions within the appendix, we find the cavity of the appendix enlarged, its walls frequently studded with the cicatrices of former ulcerations—a condition conducive to perforation.

In the acute variety, typhlitis presents itself under either one of two conditions: *First*, and most frequently, as an inflammatory affection of moderate severity and tending to end in resolution; *Secondly*, as an inflammatory affection of great severity and tending to end fatally from perforation. It is to a consideration of the latter class of cases alone that your attention is requested.

The vermiform appendix is attached to the lower posterior wall of the cæcum, and is usually directed upward and inward, lying coiled upon itself and invested by a distinct fold of the peritonæum. When swollen by inflammation, or distended with fæcal or other concretions, this coil unravels, and the appendix projects directly into its peritoneal envelope. The walls of the appendix, relatively to those of the contiguous intestine, are somewhat thinner and materially weaker. To test this latter fact, sections from four sets of intestines were respectively fastened over the escape pipe of a blast furnace, and subjected to a pressure sufficient to produce rupture. In each instance the rupture was in the appendix. Its vascular supply, in comparison, is likewise less than that of the main bowel, as any ordinary injection will demonstrate—an important fact bearing upon its liability to undergo necrotic change, in case its vessels should become occluded or their circulation be materially retarded by pressure from overdistention, as in case of impaction within the appendix.

Such are the anatomical peculiarities of the appendix, and from them its proneness to ulcerate and rupture under certain morbid conditions is quite apparent. The great danger, however, attendant upon such rupture lies in the contiguity of the appendix to the peritonæum, and in the possibility that rupture may occur before adhesive inflammation has agglutinated the two peritoneal surfaces, and so shut off the general cavity from contact with irritating exudations. Typhlitis occurring under the latter condition, and after the formation of adhesions, may terminate in suppuration and the establishment of a free communication between the gut and the subperitoneal areolar tissue, without eventuating in those disastrous sequences which follow fæcal extravasation into the peritoneal cavity. Recognizing the immunity afforded by these adhesions, surgeons are agreed that, in the treatment of perityphlitic abscesses, operative interference if possible should be deferred until the probability of the existence of adhesions is established.

Primary typhlitis with perforation, occurring *before* the formation of adhesions, when fæcal extravasation through the rent and into the peritoneal cavity may readily occur, presents a condition fraught with most imminent peril, and of alarming mortality. Chomel, Louis, Rokitansky, and Jenner positively aver that they never knew a case to end in recovery; Professors Flint* and Janeway, that in their experience no case presenting well-marked evidences of acute perforation of the appendix has ended in recovery. In twenty-seven recorded cases of typhlitis, as in four occurring in my own practice, where the disease pursued an acute course of from one to eleven days, and which were attended with every reasonable evidence of perforation, in every instance a fatal termination is recorded—a melancholy commentary, indeed, on the efficacy of our present methods of treatment.

Death under these circumstances occurs either from shock, from peritonitis, or from a combination of the two. In the 31 cases cited, 5 patients died from shock; 24 from peritonitis; 2 from shock and peritonitis combined.

Of those dying from shock,

1 died in 9 hours.
1 " " 13 "
1 " on the 2d day.
2 not stated.

Of those dying from peritonitis,

5 died in 24 hours.
1 " " 30 "
9 " on the 2d day.
4 " " 3d "
2 " " 4th "
1 " " 9th "
1 " " 11th "
3 not stated.

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* Personal communication.

It will thus be seen that the deaths from shock, relatively to those from peritonitis, are in the proportion of about one to five. It will further be noticed that the deaths from peritonitis within the first forty-eight hours far exceeded those occurring at any other period. Autopsies are recorded of three of the five who died from shock, and in each instance special mention is made that the peritonæum was found normal. Of those dying from peritonitis, the autopsy revealed only " a faint cloudiness of the peritonæum around the point of extravasation " in one, and "a very thin layer of lymph with about a tablespoonful of clear serum " in the other, of the two who died within the first twenty-four hours; while, in seven of the nine cases of those dying on the second day, it speaks of the peritonæum as being but immaterially affected—" a slight congestion " in the one, " a moderate infiltration " in another, " a thin layer of fresh lymph " in a third—descriptions that would warrant the inference that the symptomatic manifestations of the peritonitis, the abdominal pain, the depression, the vomiting, the tympanites, the final collapse, were out of all proportion to the local pathological changes.

From the foregoing it is evident that acute perforative typhlitis is a most malignant disease, killing either rapidly from shock or, in the course of a very brief period (the second day the most frequently), from acute general peritonitis. In the face of so terrible a mortality the question naturally arises, Is this disease necessarily fatal? Are its anatomical lesions of such a nature as to effectually thwart all therapeutic or operative interference? Is Science absolutely impotent to save; is her arm irredeemably paralyzed? Does human life indeed hang in such jeopardy that an insignificantly minute perforation of the intestines puts at defiance all the vaunted skill of the healing art? The great gravity of the situation is conceded, and, alas! it must be admitted that all hope from therapeutic and medical relief in these cases lies buried under an overwhelming mortality. But does it necessarily follow that all the resources of science have been exhausted, and that one so struck down in the vigor and prowess of health must of necessity die?

In the sincere and conscientious belief, founded upon a comparison of the pathological conditions underlying this affection, with a careful study of the histories of recorded and personal cases, that *timely* surgical interference may in a certain percentage of these cases bring relief and save life, the following propositions are presented: *First*, The lesion of acute perforative typhlitis is not of itself necessarily fatal, but derives its fatality from the rapid development of intercurrent and fatal complications—shock consequent upon perforation of the bowel, and peritonitis consequent upon fæcal extravasation. *Secondly*, The patient, once resuscitated from shock, is yet imminently menaced with peritonitis. *Thirdly*, The irritating action of the extravasated fluids upon the peritonæum being recognized, is not the responsibility forced upon us to relieve the peritonæum of this source of irritation prior to the development of acute and fatal inflammation? *Fourthly*, That lumbar typhlotomy (as I would respectfully suggest the name for the operation), properly performed before the development of peritonitis, ought to give an additional chance for life. *Fifthly*, That, while the proposed operation performed under such desperate extremities can never be expected to furnish even average successful results, nevertheless its mortality should be no argument against its employment, if thereby a single additional chance for life is offered.

Perforation of the intestines from any cause, while always a serious, is not necessarily a fatal lesion. Tweedie, Todd, Ballard, Fox, Bell, and Murchison positively state that they know of recoveries. Perforation of the bowels from penetrating and gunshot wounds has ended in recovery. Any of the commentaries on military surgery will furnish numerous illustrations of the curability of intestinal wounds. In civil practice the statistics are naturally not so rich; still there are some remarkable recoveries from most serious intestinal injuries. Gant * reports the case of a madman who stabbed himself in the abdomen eighteen times. Eight of these wounds penetrated the intestines, as was shown a year and a half afterward at the autopsy; and yet from these extensive injuries the man entirely recovered. John Bell † relates the case of a boy gored a number of times by a bull; the intestines protruded and were replaced. There was vomiting of blood, and there were bloody stools. The day following, the poor lad walked three miles from his village, carrying his intestines in the skirts of his coat. Again they were replaced, and the boy recovered. Professor Hamilton ‡ reports the case of a man twenty-five years old, who fell from a table on to an iron rod four feet and a half in length, nearly half an inch in breadth at the point, and expanding rapidly to a breadth of five eighths of an inch, with a rough surface. It entered the abdomen four inches below the umbilicus and two inches to the right of the median line, and came out upon the back on the same side, two inches from the center of the spine and about opposite the last dorsal vertebra. He immediately arose and pulled out the rod himself.

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* "Surgery," vol. ii, p. 461.

† Quoted by Gant, *op. cit.*, vol. ii, p. 461.

‡ "Buffalo Med. Jour.," Jan., 1859.

He then walked across the street and sent for his physician. Eight days after, he was found sitting up in bed, amusing himself with his violin.

The numerous gastrotomies and enterotomies that have been reported of late, not only demonstrate that the hollow viscera can be boldly and freely incised, and the wound be successfully closed, but they give encouragement to surgical innovation in these acute cases of perforation.

Considering the hazardous character of these operations, the success which has attended them has been surprisingly satisfactory. The special pathological condition, perhaps, which most nearly approximates the lesion of perforative typhlitis is that which exists in certain cases of strangulated hernia, where circumscribed sphacelation has occurred. These cases, if left without operative interference, invariably terminate fatally. With an operation and the establishment of an artificial anus, recovery is by no means infrequent.

It certainly seems singular, in the light of these illustrations, that injuries of such gravity can be recovered from, while a minute perforation of the appendix is so fatal. A partial explanation of this discrepancy can probably be found in the fact that, when a wound occurs in the intestinal wall (I refer now to punctured wounds), there is an immediate eversion of the mucous membrane, which effectually closes the aperture. In the appendix we have no such redundancy of tissue. The perforation is the result of molecular disintegration with loss of tissue, and extravasation follows immediately. So far as the peritonæum is concerned, there is probably no greater tolerance in the one instance than in the other.

The anatomical lesion of perforative typhlitis not being of itself necessarily fatal, the disease derives its fatality from the development of intercurrent and fatal complications—shock consequent upon perforation, and peritonitis consequent upon fæcal extravasation.

Acute typhlitis may present itself, as we have remarked, under either one of two conditions. Ordinarily, it is an affection of moderate severity, ushered in with local distress, and accompanied with more or less symptomatic disturbance. Fever, of greater or less intensity, anorexia, nausea, vomiting, and constipation are present. Tenderness and distress, rather than acute pain, are the most prominent, as well as the most annoying symptoms. In proportion as the peritonæum and adjacent cellular tissue become involved in the inflammatory process, the severity of the pain increases. From paralysis of the walls of the intestines, or from some abnormality of function by which the peristaltic action is diminished, accumulation of fæces within the cæcum is of pretty constant occurrence. As a result of this accumulation, tumefaction of the cæcum occurs. The tumor which is thus formed, sometimes with great rapidity, must be distinguished from the tumor of perityphlitis, with which it might be confounded.

Circumscribed peritonitis has been so generally associated with typhlitis, that I was quite surprised to find that two of my own autopsies, on subjects who had each had several attacks of typhlitis, failed to give any positive evidence of the preëxistence of this disease. While this statement is at variance with the general literature of this subject, it accords with the records of such few autopsies as have been published. Peritonitis, doubtless, often does complicate typhlitis, but I believe it to be more frequently associated with perityphlitis than with typhlitis proper. The disease usually runs an acute course of from seven to fourteen days—in mild cases, from three to five days—and ordinarily terminates favorably either in resolution or in suppuration. It would be quite germane to our present purpose to continue the history further. I have ventured to trespass upon your indulgence in presenting the salient and familiar features of an acute attack, that I might thereby the more forcibly emphasize that sudden and alarming change in our patients' condition that predicates with only too fatal certainty the occurrence of perforation. Perforation, as a rule, does not occur in the first attack of typhlitis, except in those rare instances where the inflammation is due to the presence of some foreign body, as a cherry-stone or an orange-seed, within the appendix. On the contrary, there is a repetition of mild acute attacks. Ultimately, however, owing to the pathological conditions to be cited, or to the unusual severity of the inflammation, perforation of the appendix occurs. In reviewing the literature of the subject, it is remarkable that a previous history of constipation, with mild intercurrent attacks of typhlitis, is given in nearly all of the cases recorded. Perforation may occur at any moment during the continuance of the inflammation. Fortunately, however, in most instances in which this accident has occurred it has happened late in the course of the disease, and after peritoneal adhesions have formed. The exception is found in those who have been the subjects of mild and repeated attacks of acute typhlitis—subjects in whom the cæcum and vermiform appendix have been chronically distended, their walls having become permanently weakened, both from atrophy and from the presence of cicatricial tissue and excavated ulcerations.

With the rupture of the gut, certain subjective symptoms arise that are not without significance. Not infrequently there is a distinct sensation complained of, as if something within the body "had given way." This is accompanied at first with oppressive nausea and faintness, but is speedily succeeded by the sharp, intense, and characteristic pain caused by contact of the extravasated gases or fluids with the highly sensitive peritonæum. Shock, more or less profound, rapidly supervenes. The patient's condition is now hazardous in the extreme. No description, however dramatic, could convey any adequate conception of the sufferer's condition. The patient, ghastly white and with countenance expressive of the keenest anxiety, lies bathed in a cold and clammy sweat. His features are shrunken and drawn; the eye is listless and dead; the nose is pinched and thin; the lips are blue and so drawn as to expose the teeth. Hopelessness, agony, and despair are imprinted on every lineament of the face. The respirations are costal and shallow. The pulse is rapid and weak. The voice is faint and high-pitched. The urine is retained, but the fæcal dejections are passed unconsciously, and persistent hiccough and vomiting add to the sufferings of the patient and the seriousness of the situation.

The depth of the shock by which the patient is overwhelmed seems to bear no relation whatever to the extent of the intestinal lesion. No author, I believe, makes mention of this fact, but a comparison of the histories of several recorded cases with the lesions, as revealed at the autopsy, warrants the statement. Two cases occurring in my own practice furnish excellent illustrations. In one, that of a man thirty-two years old, of magnificent physique and perfect health, the shock was overwhelming. There was complete prostration and collapse, positive reaction not occurring for upward of six hours, when the patient gradually rallied, to die, on the fourth day, of peritonitis. The autopsy revealed an enlarged and dilated appendix, with a perforation no larger than a pinhole. In another case, that of a feeble woman fifty-nine years old, the shock was comparatively insignificant, although nearly one quarter of the appendix had sloughed off. Shock, then, proves the immediate cause of death in about twenty per cent. of these unfortunate cases, and, if the patient can be rallied from this condition by energetic and skillful treatment, it will be to pass the next twelve to eighteen hours in comparative comfort, at the expiration of which brief interval peritonitis, of a rapidly fatal type, sets in.

It is in this short but highly critical period, after the patient has rallied from the first depression of shock, and before the advent of peritonitis, that operative interference, if it is to avail aught, is to be employed. To delay until after the development of general peritonitis is fatal. A human life perchance hangs upon the disposition of an hour, and valuable time should not be hopelessly sacrificed, either in a too scientific desire to make a positive diagnosis, or in a vain but idle trust that by some miraculous providential interposition the life of our patient will be spared.

Diagnosis.—Whatever, if any, the value of this paper, it hinges upon our ability to recognize perforation prior to the occurrence of peritonitis. The possibility of this becomes, then, a question of the most serious importance, but one which, with due care, can in most instances, I believe, be satisfactorily demonstrated. The grounds for diagnosis in this, as in many other obscure abdominal affections, do not rest upon the existence of any one pathognomonic symptom. The previous history, if it can be obtained, and the individual symptoms as they arise, afford in their totality fair presumptive evidence of the nature of the lesion.

In how important a manner the history of previous attacks of typhlitis bears upon the diagnosis, we can surmise from what has already been said upon the clinical history of the disease. Acute idiopathic perforation in an appendix that has not been subject to previous pathological change is one of the rarest of accidents. As we have remarked, in nearly all the cases recorded, the perforation has occurred in those who have been subject to previous attacks of cæcal distress consequent upon fæcal impaction, and *the fatal attack has invariably been preceded by previous attacks, more or less aggravated, of acute typhlitis.* A satisfactory clinical history once obtained, much of the doubt that would otherwise exist is at once dispelled.

Pain is a second factor in the diagnosis. The pain, to be significant of perforation, must be developed acutely, and its seat of greatest intensity must be at or near the known situation of the appendix. The seat of greatest intensity can be determined, with approximate accuracy, by fixing the bowels from the opposite side with the left hand, and making deliberate pressure over each half inch of the abdominal surface. An examination thus conducted will frequently furnish important information to the experienced diagnostician under circumstances in which a careless and superficial palpation would furnish only negative results. The pain at first is sharp and localized, and pressure over the point of perforation is not infrequently accompanied with reflex sensations of nausea and faintness. Acute pain *per se* does not warrant the inference of perforation. We have very great pain in many other morbid conditions affecting this region—notably in intussusception, in ileus, in hernia, in inflammation in or about the right ovary, in the passage of a renal calculus down the right ureter, in acute inflammation of the cellular and muscular structures of the right iliac fossa, and in functional and inflammatory disturbance in the gut. The pain must be localized; and this, when taken in connection with the clinical history, enables us to predicate the nature of the lesion with reasonable probability.

Shock is a third factor in the diagnosis. This is more or less rapidly developed in all cases of intestinal perforation, and ranges in intensity from syncope, coming on coincidently with perforation, to severe and overwhelming collapse. In the thirty-one cases cited, death in five of them was directly attributable to this cause. No class of injuries, probably, is followed more speedily by collapse than are those affecting the hollow viscera of the abdomen. It is the rapidity and overwhelming character of the shock that often first direct our attention to the abdominal cavity as the seat of the disease; and it is the shock, when taken in connection with the pain and the clinical history, that renders the diagnosis quite as positive as it can be in a lesion whose nature necessarily is so obscure. With these considerations on the pathology, clinical history, symptomatology, and diagnosis of acute perforative typhlitis, I desire to present briefly the histories of four cases of the disease which have fallen under my personal observation, and the treatment which an unprejudiced study of the subject leads me respectfully to suggest.

Case I.—Mrs. M. C., aged fifty-nine, was convalescing from an attack of acute lobar pneumonia of the right lung, followed by a severe attack of diphtheria, during which she had been attended conjointly by Dr. T. A. McBride, of this city, and myself. The pneumonia had resolved satisfactorily, considering the age of the patient; and the diphtheritic exudation, which had not been very extensive, had entirely disappeared. There was every prospect of a favorable convalescence. On March 28, 1875, she complained of constipation, which was probably due to the large doses of iron she was taking. The iron was stopped, and she was ordered a laxative diet. *29th.*—A. M.: No movement of the bowels; much distress from constipation. Ordered a dose of oil, guarded with laudanum. 4 P. M.: No movement; intense pain in the right iliac fossa. Ordered a large enema of soapsuds. 7 P. M.: A copious movement occurred after the enema, followed by syncope; patient very much exhausted; pulse 92, feeble; respirations 28; temperature 99° F. She indicates a painful spot in the right iliac fossa, two inches and a half above Poupart's ligament and three inches from the median line. This spot has pained her for years, she says, whenever her bowels have become constipated. Pressure on this point produced a sense of faintness, which was accompanied by vomiting of a sour, bilious matter. Ordered opium, stimulants, and hot fomentations. 11 P. M.: Seen by Dr. McBride. Perforation suspected by him, and fatal peritonitis prognosticated. *30th.*—7 A. M.: Patient apparently better. Slept well. No pain except on pressure over the spot indicated; no tympanites; no tumefaction. Dr. McBride maintained his diagnosis of perforation. *31st.*—2.30 A. M.: Patient bloating rapidly. Pain general over the abdomen. Hiccough and vomiting. 11 A. M.: Tympanites excessive. Respiration difficult. Extremities cold. 4 P. M.: Patient unconscious. 7 P. M.: Exactly forty-eight hours from the moment of attack, she died.

Autopsy, April 2d.—The abdomen only could be examined. An incision through the linea alba to the peritonæum revealed that membrane apparently healthy, although greatly distended with gas. On opening into the abdomen, about an ounce of pinkish serum was found. The colon and cæcum were found distended with pultaceous fæcal matter that was exceedingly offensive. The walls of the appendix were very much thickened, although they were entirely free from adhesions. Its lower fourth was gangrenous, and it was swollen to the size of my little finger. It was tightly packed with hardened fæces, which exuded from it like oil paint from a tube. These were afterward dissolved in water, but no solid concretions were found. The peritonæum over the point of rupture was slightly congested and stained apparently by extravasated fæces. A few isolated patches of lymph were found.

CASE II.—I was requested by Dr. Carradine, of this city, to see Mr. James M. P. in consultation September 25, 1876. Found him suffering from acute general peritonitis, with the following history. Three days previous, after unusually close application to business, he found himself feeling generally unwell. Being a pharmacist, he prescribed for himself five grains each of quinine and rhubarb, and two of calomel. The following morning, as the medicine had not operated, he took a bottle of citrate of magnesia. At 4 P. M. there had been no operation, and he took a dose of oil. 6 P. M.: No operation. He drove to a Turkish bath, hoping to get relief. After the bath, and while being shampooed over the abdomen, he experienced intense pain in the right iliac fossa, accompanied with vomiting and prostration. He had had similar pain before, but not so severe, when suffering from constipation. He remained in the bathing establishment several hours, during which time he drank nearly a quarter of a bottle of brandy, and had several attacks of syncope. He slept in his store all night, being too weak to get up-stairs to his bedroom. He experienced intense pain, with uncontrollable faintness. Peritonitis set in on the second day. He was seen by Professor Loomis, Dr. Carradine, and myself. The diagnosis of peritonitis was concurred in. Dr. Loomis says, "Perforation probably occurred coincidently with the first attack of pain and syncope." Death took place on the seventh day. No autopsy.

CASE III.—Mr. J. C. S., aged thirty-two, had always been in perfect health. He was six feet one inch in height, and weighed 220 pounds. He had suffered for the last five years more or less with chronic constipation, with occasional attacks of "colic" in the right side. He generally took a dinner pill at night, recommended to him by Professor Metcalfe. He had twice had "inflammation of the bowels." June 29, 1878, he was suddenly seized, while bathing, with intense pain in his right side. He had had some soreness there for a couple of days. All his trouble, he said, had started from this same place. The night before, he had taken a dinner pill, and that morning a tumblerful of Friedrichshall water, neither of which, however, had acted. 11 A. M.: The intensity of the pain drove him to his room. At 12 noon he was found, with his clothes on, lying across the bed—apparently dying and moaning piteously; respirations very feeble; pulse not perceptible. I was immediately summoned. Hypodermic injections of brandy and musk were freely given, in conjunction with rectal injections of warm milk punch. The body was enveloped with a huge sinapism, and surrounded with bottles of hot water. Slight reaction occurred in about thirty minutes—consciousness being slowly restored, under inhalations of nitrite of amyl. There was no positive reaction, however, until 5.45 P. M.: pulse 118; respiration 24; temperature 103·25° F. Midnight: patient sleeping nicely; pulse 122; respiration 28; temperature not taken. *30th.*—8 A. M.: Pulse 112; respiration 20; temperature 101.° Slept well all night. Feels "tip-top"; wants his breakfast. Much irritated at being restricted to milk. Pain on pressure in the right iliac fossa; slight tympanites. Turpentine stupe ordered over the abdomen; one grain of opium every hour. 12 M.: Feels comparatively comfortable. Is determined to get up—says he is "not sick." *July 1st.*—7.30 A. M.: Sat up against orders, remaining up thirteen minutes. Took to his bed again from intense pain in the right iliac fossa. I saw him shortly after: pulse 110; respiration 24; temperature 100°. There was slight puffiness over the cæcum, but no tumefaction. Gave a hypodermic injection, and ordered the stupes and opium to be continued. 5 P. M.: Pain more severe, with some disposition to vomit. Gave a hypodermic injection of sulphate of atropia gr. $\frac{1}{60}$. Opium to be increased to three grains every two hours. 7 P. M.: Pain not so severe; still some nausea—relieved by a hypodermic injection of atropia. Pulse 112; respiration 18; temperature 101·25°. *2d.*—4 A. M.: Opium has been given, three grains every two hours, since last visit. Pulse 134; respiration 16. Abdomen more distended, though not excessively so; has no pain, except on pressure. Ordered tincture of veratrum viride, ♏ iij every half hour, until the pulse was brought down to 110; then every hour until it was brought down to 100. 8 A. M.: Pulse 114; respiration 13; temperature 102°. He has taken, in all, thirteen minims of tincture of veratrum. Pain still persists in the old spot, and the general abdominal pain is worse, also the tympanites. The patient continued to grow worse until the afternoon of the 3d (fourth day), when he died.

Autopsy, July 5th.—A most thorough search failed to show any lesion other than a pinhole perforation through the distal extremity of the appendix and a catarrhal condition of its lining membrane, with a second ulceration, non-penetrating, near the first. The cæcum and the appendix were distended with soft fæcal matter. In the right iliac fossa the peritonæum might have been a trifle more opaque than the general surface—otherwise it was normal. The intestines were enormously distended with gas.

CASE IV.—G. W. T., aged twenty-eight, a bookkeeper, was suddenly seized, May 15, 1880, while writing at his desk, with intense darting pain through the side of the abdomen. The pain was followed with vomiting and faintness. I saw him at 3 P. M. The first attack had occurred at 11 A. M. I found him lying on his back with the right leg drawn up, moaning piteously and begging for ice-water, which was ejected as soon as swallowed. His bowels had moved twice during the day. The extremities were cold, and the body was covered with a clammy sweat. Pulse 106, very weak; respiration 18; temperature 97·75° F. He complained of pain in the right iliac fossa, but there was no tumefaction or swelling of the abdomen. Ordered opium, stimulants, and hot fomentations. 9 P. M.: Reaction fair; patient easier. Pulse 118; respiration 22; temperature 101·5°. He says this is the third attack of the kind he has had during the last two years, and the worst of all. Says his bowels have not been moved for three days. He took a large dose of castor-oil last night. Ordered absolute rest; opium one grain every two hours; hot fomentations to be continued. *16th.*—9 A. M.: General condition better. Pain on pressure in one spot, which might be included in a circle of a diameter of three inches, four inches above Poupart's ligament, and about four inches from the median line. *17th.*—The evening of the second day, after slight retching, violent peritonitis developed. The patient died the following afternoon—the third day.

Autopsy.—This revealed palpable evidences of peritonitis, with a slight deposit of lymph around the appendix; also adhesions of the appendix to the peritonæum. The appendix contained fæcal matter and a mass of berry seeds, and revealed a small, round ulceration on the anterior side near its distal extremity.

Reviewing these cases in the light shed upon them by the autopsies, the question at once suggests itself, Were they of necessity fatal in themselves? Could no expedient have been adopted in these instances, whereby valuable life might have been saved? Recognizing the impotency of medication to arrest the disease, why not under such circumstances proceed at once as we would in a case of purely surgical disease, in which the indications for operative interference would be positive and absolute? Guarded by every antiseptic precaution, why not in such cases cut down on the perforated appendix from the side, as in Amussat's operation; wash the adjacent peritoneal surface with disinfectants, so cleansing it of all irritating exudations; secure the ulcerated appendix to the mouth of the wound by stitches, and so afford free and perfect external drainage? Would the chances of such a patient be imperiled by the operation, or would his condition be worse than is that of one after ovariotomy, the Cæsarean section, or Battey's operation? Cicatrization, it seems to me, would occur in the ulcerated appendix, and the artificial anus thus formed would doubtless behave in this instance as it usually does, and would close in a short time. Surgeons do not hesitate to invade the peritonæum and extirpate the ovaries and the uterus when the exigency is far less critical, and the recovery of their patients justifies the risk of the operation. The peritonæum is daily manifesting a tolerance to surgical interference that was never dreamed of, and the triumphs of peritoneal surgery are becoming more and more brilliant as the field for its operation enlarges.

The operation is readily performed. The appendix is easily reached by a transverse incision commencing two inches in front of the longissimus dorsi muscle, and extending forward about six inches. Integument, fascia, muscles, are carefully divided until the peritonæum is reached; this is opened, and the appendix is exposed. This operation I have frequently performed on inferior animals, and invariably with success—the artificial anus closing in from a week to ten days. Performed at an early period, before the occurrence of general peritonitis and under the protective influence of antisepsis, that the dangers of septic poisoning may not be added to those already existing, I believe that this operation offers a better chance for life than any procedure at present practiced for the relief of this terrible disease. Professor Gouley,* before the Surgical Section of the American Medical Association, at its last meeting, in this city, expressed emphatically his belief in the feasibility of an operation performed under such circumstances. Dr. Vanderveer, of Albany,† in a communication to the "Medical Gazette," expresses his regret that in certain cases of perforative perityphlitis he has not cut down upon the perforated intestine.

In closing, permit me, as equally pertinent to this operation, to quote Mr. Jacobson, ‡ surgeon to Guy's Hospital, on operative interference in intestinal obstruction. "I know," he says, "how fatal such operations have been, but I also know that very rarely (I speak of acute intestinal obstruction) a case gets well if left to itself. To some, the very recommendation of an operation at all may savor of that rashness which comes of inexperience. I would reply that the very want of success in previous operations is accounted for by the fact they were not performed under those conditions which I am about to point out as being essential to success. Above all, the operation must be performed earlier than has heretofore been the case. It is hopeless to perform it when symptoms of peritonitis or enteritis have set in. Those who wait, as I venture to say too many have waited, till the abdomen is generally and enormously tympanitic, till the temperature is persistently high, or is only falling before the inevitable end, till the pulse is running down, and the patient is in a condition of irrecoverable collapse—those who wait till any or all of these conditions are present had far best not operate at all."

Mr. Teale,§ speaking of the operation for intestinal obstruction, says: "The object of my paper was to reduce the dread of peritonitis to what I believe to be a more true position in the treatment of intestinal obstruction, and to maintain that, in those cases in which recovery seems hopeless unless surgical relief can be given, we need not be deterred by the fear of peritonitis from submitting the patient to the 'safer risk' of exploration. Many will prove to be hopeless from the beginning, some will prove to have submitted to the operation too late, a few will recover as the direct result of the operation."

Howard Marsh ‖ says: "Shall we ever know what percentage of cases of obstruction might be saved by surgery until we adopt the rule of operating before peritonitis and other serious local changes have set in, and before the patient's strength has slowly ebbed away? As to the danger of opening the abdominal cavity, is it more dangerous to open it before material changes have ensued, and divide a constricting band or release an intussusception, or establish a false anus, than it is to open the abdominal cavity and to remove a large tumor of which perhaps much is solid, and which is, perhaps, extensively adherent to the intestines, the omentum, or the uterus?"

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* Personal communication.

† "Med. Gaz.," March 27, 1880

‡ "Brit. Med. Jour.," Sept. 27, 1879, p. 493.

§ *Ibid.*, p. 494.

‖ "Trans. of the Clinical Soc. of London," vol. xii, p. 103.

Mr. Bryant* says: "I am quite aware that, in advocating early interference in these examples of acute obstruction, I shall be met with observations regarding the difficulty of diagnosis, which I respect, and that under these circumstances so severe a measure as laparotomy should not be undertaken. But I do not see the matter in that light; for I maintain that it is not required of the surgeon to diagnose the precise cause of the obstruction, so long as the diagnosis of its existence can be determined, and do not think that, because such cases as these occasionally recover without operative interference, we should forget that a large majority die miserably, unrelieved. I plead, therefore, for the majority."

In closing this paper upon operative interference in acute perforative typhlitis, permit me to add that before these unfortunate patients are permitted to die without a last hope being held out to them, even though the diagnosis between it and some obscure intestinal obstruction be not absolutely positive, it would be better, far better, it seems to me, to open the abdominal cavity and relieve a concealed hernia or an invaginated gut, or reduce an ileus, or divide constricting bands of old peritoneal adhesions—diseases the severity and identity of whose symptoms might perchance lead to an error in diagnosis—than to have revealed at the autopsy a condition which might have been obviated by timely surgical interference.

The dread of opening the peritoneal cavity which has held the profession in docile fear these many years, and by which thousands of valuable lives have been sacrificed, is disappearing before the brilliant achievements of ovariotomists the world over. Undue haste and unwarranted interference can nowhere be more severely reprobated than in operations attended with so great risk as those involving an opening into the cavity of the abdomen. Still, timidity and prudence are not convertible terms, and timidity shrinks before the operation which the prudent surgeon, who operates with a full appreciation of the responsibilities he assumes, would carry through to a successful and happy culmination.

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* "Trans. of the Clinical Soc. of London," vol. xii, p. 109.

REMOVAL OF BOTH OVARIES FOR HYSTERO-EPILEPSY, WITHOUT CONTROLLING THE CONVULSIONS; RAPID IMPROVEMENT UNDER CENTRAL GALVANIZATION FOLLOWED BY GENERAL FARADIZATION, NERVE TONICS, FULL FEEDING, AND REST.

By EDWARD C. MANN, M. D.,

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During the latter part of April last I was called in consultation by my friend, Dr. J. Marion Sims, to see a case of hystero-epilepsy. I found a lady of twenty years of age, who was suffering from cerebral and spinal anæmia; who was having terrific convulsions day and night, which were aggravated both in duration and in intensity by anything that disturbed her very excitable nervous system. Her history, as given by the mother, was as follows: During childhood she had very severe convulsions with every infantile disease, and also whenever she was in an anæmic condition. These convulsions, from infancy, presented an epileptiform type. When she was ten years and a half old, menstruation appeared, and at the menstrual periods thereafter, until she was fourteen years old, the convulsions were of the severest type, exhausting her very much. She was treated by nearly all the physicians of eminence both at home and abroad, but with very little success. While abroad, occupied with sight-seeing and taking a great deal of exercise, she had almost absolute freedom from the convulsions, although she was very thin. Sir Thomas Watson gave it as his opinion that the convulsions would disappear of themselves as she grew older, and gave the diagnosis of hystero-epilepsy; he suggested no treatment.

The family returned home, and on their arrival in America the convulsions reappeared with renewed intensity. The patient would have sometimes forty convulsions in the twenty-four hours. The mother applied to Dr. W. A. Hammond, and he sent her to Dr. Sims for his opinion relative to the propriety of performing Battey's operation of oophorectomy, hoping that this would give relief. There was a distinct aura at this time, starting from the uterus and radiating toward each ovary, where it sometimes stopped, but, if it reached the epigastrium, it always resulted in a terrific convulsion. Menstruation was irregular, scanty, and painful. Pressure on the uterus and ovaries by conjoined manipulation caused the sensation of the aura, but failed to produce actual convulsions. She never lost consciousness during the seizures. I have tested this point with her so often that there can be no mistake. As no treatment had heretofore given any relief, Battey's operation was determined upon, and was performed by Dr. Sims, January 11, 1880. The ovaries were found to be diseased, having undergone cystic degeneration. The patient soon recovered from the effects of the operation, but her convulsions were not controlled by it. I think, however, that by this operation Dr. Sims laid the corner-stone of the improvement which I afterward obtained, as I do not believe that with diseased ovaries I could have been as successful as I was. It was decided that the patient should be placed under my care, and I accordingly took charge of her May 22d, when she became a patient at my private Retreat for Nervous Diseases. At this time she had, as I have said, terrific convulsions night and day, the element of epilepsy predominating. There was no epileptic cry, properly speaking, but she would call out "Mamma," and become very pale; there would be a twisting and squinting of the eyes and terrible convulsive movements of the legs and arms, strongly impressing one with their close alliance with the most aggravated movements in the worst cases of chorea. There was absolutely no loss of consciousness in the paroxysms. She would come out of a severe convulsion instantly, with panting breath, as if she had just come in from an excessively long walk. In a few seconds she would feel comfortable again. The thumbs were not folded into the palms of the hands. She differed entirely from most patients with hysteria, in that she suffered mentally very much, fearing in her own mind that she had true epilepsy, and at times would grow quite morbid about it. At such times I tried to raise her spirits, telling her that she would certainly recover in time, and, when I had fully persuaded her that I did not consider her attacks true epilepsy, she became more cheerful and happy, and made every effort to fight off the convulsions.

I questioned the mother closely about hereditary predisposition, but she denied any hereditary taint of nervous disease, or anything else that could even remotely have influenced the child unfavorably. I questioned her also very closely about her own mental condition while pregnant, as it is my firm belief that the future life of an unborn babe is strongly affected by the mental state of the mother during gestation; but she could recollect no disturbing circumstances, even of a trivial character. The mother was a woman of more than ordinary mind, and of a remarkably equable disposition. I came therefore to the conclusion that the pathology of the case I had to deal with was that of an unstable nerve element; and that the seat of the disease was in the nerve centers, with, very probably, the principal irritation in the cortical motor zone of the central nervous regions. There was marked anæmia of the nervous centers. Upon what pathological process in the brain the convulsions in her infancy depended, I am at a loss to conjecture, although I presume it would be fair to consider it a lesion of irritation from innutrition depending upon anæmia of the brain and cord. When she was about ten years old, there was gastric disturbance, and for three years she ate scarcely anything at all.

Primarily, I had nerve cells to feed, in order to restore the integrity of the nervous system; and I accordingly fed her with milk very plentifully, and gave her phosphorus and the animal fats in abundance. I made her rest nearly all the time at first, until her muscular strength returned, when I had her take a very moderate amount of exercise daily. I gave her, to quiet the neuralgic pains in the pelvic region, which distressed her very much, hypodermic injections of atropia, $\frac{1}{60}$ grain each, with almost instantaneous relief every time. I administered the galvanic current daily for half an hour in the form of central galvanization, the negative pole being placed on the pit of the stomach, and the positive over the top of the head, the cervical sympathetic, and on each side of the seventh cervical vertebra, using a moderately strong current, which should not be disagreeable to the patient. I considered this indicated to improve the nutrition of the deeper tissues of the nervous system, and to combat the spinal anæmia and irritation which existed. I also gave her iron and nux vomica. As she slept very badly, waking perhaps twenty times in the night with convulsions, I gave her a night mixture of sodium bromide, 60 grs., tincture of cannabis indica, 40 minims, with a warm bath three times a week at night.

I soon began to see a marked improvement. The combination of sodium and cannabis indica enabled the patient to sleep, whereas previously she had lain awake nervously waiting for the return of the next convulsion. Making her sleep without disturbing her digestion was a great point gained. Duquesnel's aconitia was given once a day in doses of $\frac{1}{120}$ of a grain, and after about two weeks of its administration I gave hypodermic injections of Fowler's solution until the physiological effects of arsenic appeared, when I stopped it. I diluted the Fowler's solution one half with water to prevent the formation of abscess, commencing with 3 minims and running up to 20 minims (or 40 in all, including the water). I did this because the nature of the convulsions suggested chorea, and I determined to combat any such influence in the central nervous system. It must be remembered that, almost from infancy, my patient had been taking some drug or other, until she had taken almost everything. She had never taken aconitia, atropia, arsenic, or the sodium and cannabis mixture before; neither had she ever had electricity properly applied. I had also to treat an inflammation of the cervix uteri, which I did by making a cup of absorbent cotton wrung out of warm water and filled with glycerole of bismuth which for three weeks I applied every day, at last completely curing that source of irritation to the nervous system.

The patient began to gain in health and appearance, and evinced a desire to eat heartily and take exercise, and a flush of healthy color began to show in her lips and cheeks. The convulsions steadily diminished in frequency and also in intensity. I now substituted general faradization for central galvanization, and the improvement still continued. In this connection I would say that I am sure, from the results of three cases of epilepsy that I have treated, that the induced or faradaic current possesses a special power for good over the nervous system in such cases. The convulsions, at the end of two months, had completely left her during the daytime. I had now dropped the arsenic and aconitia, still adhering to electricity, the sodium bromide and cannabis indica at night, and the warm baths, together with phosphorus and cod-liver oil after each meal. She was now having perhaps seven or eight seizures at night, but slept soundly between them. These grew less in frequency and intensity, and at the expiration of three months I sent her home to the West altogether a very different-looking girl from what she was in May. She had gained some twenty pounds of flesh, and felt very well. There was still remaining some convulsive twitching of the muscles at night, but nothing like a true convulsion as before. The patient was obliged, for family reasons, to return to the West at the beginning of September, and, while I thought another month of treatment desirable, the results obtained were most gratifying.

In speaking of epilepsy, I may remark that we have had three cases in which we attributed a cure quite as much to the use of the faradaic current as to the other treatment. In these three cases the bromides were not used at all, as the patients had all been seriously affected by them; and the phosphide of zinc, massage, electricity, and hypodermic injections of atropia constituted the treatment. I order all my patients with epilepsy to take long walks daily, and consider out-door exercise a very powerful agent in this disease. Cod-liver oil, in teaspoonful doses, is also of immense benefit in the class of hereditary diseases to which epilepsy belongs, and seems to exert a special prophylactic effect.

Respecting the cerebral localization of the disease in this case, my opinion is as follows: The upper and lower limbs, the forearm, the hand, and the facial muscles, were all affected by the convulsions. There was an alteration in speech—a deficiency of impulse, and some difficulty in the conduction of speech at times; in other words, partial and incomplete verbal paralysis. The functional brain disease evidently affected the ascending parietal convolutions of both hemispheres, which are the cortical centers for motility—in the innermost and superior part, for both upper and lower limbs; in the middle, for the forearm and hand; and in the external or inferior part, for the facial muscles. The most inferior part of the ascending frontal convolution and the foot of the third frontal convolution, which are the motor centers for the muscles which affect the pronunciation of words, were also undoubtedly affected, leading to the alteration and deficiency of impulse of speech. I also consider it probable that there was bilateral circulatory disorder of the cornu Ammonis, which, had the case progressed for the worse, would undoubtedly have proceeded to atrophy and sclerosis. The cornu Ammonis has this relation histologically to the motor functions, that its cellular elements consist of a cortical stratum of grand pyramidal nerve cells, analogous to the structure of all the central motor nervous regions. Charcot, in his "Lectures on the Diseases of the Nervous System," speaks of a case of hystero-epilepsy, where he found bilateral sclerosis of the cornu Ammonis; and in the autopsies in cases of epilepsy, Foville, Bouchet, Meynert, and Pfleger, all unite in describing this lesion of sclerosis and atrophy of the cornu as of frequent occurrence. On the other hand, the physiological results in Kussmaul and Tenner's experiments on epilepsy in animals, where epileptic convulsions were artificially induced, seemed to show that ablation of the cornu Ammonis had no effect on the general convulsions.

The pathology of this very interesting case I therefore consider to be a circulatory disorder, accompanied by great irritation of the cortical motor zone of the central nervous regions; which, had the case progressed unfavorably, would have led to atrophy and sclerosis of the ascending parietal convolutions, the most inferior part of the ascending frontal convolution, and the foot of the third frontal convolution, and of the cornu Ammonis.

THE INHIBITION OF SENSIBILITY AND MOTION.

By ISAAC OTT, M.D.,
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Sensibility.—When a hemisection of the spinal cord is made, there is hyperæsthesia upon the side of section, and anæsthesia upon the opposite side. Setschenow, Woroschiloff, and Ludwig have attempted to explain this by means of an inhibitory apparatus. I have located in the base of the optic thalami and in the crura cerebri inhibitory centers of the reflexes of the sphincters. It has also been shown that from these centers run fibers, which begin to decussate in the crura cerebri, and continue to do so through the pons Varolii down to the nib of the calamus scriptorius. After the decussation, they pass mainly down the internal half of the middle third of the lateral columns of the spinal cord. That these inhibitory fibers are also concerned in other reflexes, I have shown, for after their section hyperæsthesia results. Thus, if I make a hemisection or a three-quarter section of the pons, on a level with the corpora quadrigemina, then hyperæsthesia ensues upon the opposite side, because the main body of inhibitory fibers crossing over have been cut. The inhibition on that side being removed, peripheral irritations can radiate more rapidly through the spinal cord. Brown-Séquard has also set forth a series of facts which further confirm this view. I have gone over his experiments upon this subject. Thus, if I make a hemisection of the spinal cord, or a section of the sciatic nerve, then the whole opposite side of the brain and spinal cord is reduced in excitability, as is shown by a hemisection of the medulla on that side. Here, the irritation of the sensory nerve by the section called into exaggerated activity the inhibitory centers located at the base of the thalamus and crus cerebri, which depressed the excitability of the opposite half of the central nervous system. The irritation of the sciatic seems to travel up on the same side, and not through the few decussating sensory fibers. Further, section of one half of the spinal cord or one sciatic depresses the irritability of the opposite side, so that a second section of the opposite half of the spinal cord, or of the sciatic, does not cause any radiation of the irritation up the spinal cord. The first section, by irritating the inhibitory centers, has prevented the impulse of the second section from ascending to any extent.

When a three-quarter section is made of the right lateral half of the medulla, there is hyperæsthesia on the right side, especially in the posterior extremity, and anæsthesia on the left. If, now, I make a hemisection of the spinal cord on the left, then the hyperæsthesia appears on the side of section. Here the left hemisection of the spinal cord produced hyperæsthesia, just as section on the right side of the medulla did, because the inhibitory fibers have been cut. The anæsthesia on the opposite side was produced by the section calling into activity spinal ganglia which inhibit on that side through their intact fibers. I observed a similar phenomenon when I made a three-quarter section of the pons and produced hyperæsthesia upon the opposite side. Here hemisection of the cord on the same side as the first section produced anæsthesia in place of the preceding hyperæsthesia, which was transferred to the extremity behind the last section.

Motion.—Here Brown-Séquard has also made a striking experiment in favor of inhibition phenomena of the central nervous system. Thus, if in a kitten a hemisection of the brain is made on the right side, through the corpora striata and through the corpora quadrigemina, then paralysis ensues upon the opposite side of the body. If, now, a right hemisection be made of the pons, then the paralysis disappears in great part on the opposite side, and ensues on the same side as the section of the pons. Here the first two sections have called into activity the main inhibitory centers of the right side and inhibited motion on the opposite side, but the section through the pons released it and caused paralysis to appear on the same side for similar reasons. The third section has called into activity the fibers coming from the left thalamus and crus.

From these facts I deduce the following law: that all hemisections or three-quarter sections just behind the cerebral crura cause hyperæsthesia upon the opposite side and paralysis upon the same side. All hemisections in front of the crura cerebri produce paralysis upon the opposite side. All hemisections below the point where the major part of the inhibitory fibers have decussated produce paralysis and hyperæsthesia upon the same side.

It may be objected that these inhibitory ganglia are hypothetical, that no microscopist can point them out. In reply, I would ask: Can any microscopist point out inhibitory ganglia in the frog's heart, or distinguish them from exciting ganglia? Yet all observers agree that cardio-inhibitory ganglia exist. When Goltz tapped a frog upon the abdomen, and stopped the heart, was not a sensory nerve excited and the inhibition of the vagi called into activity? Can any microscopist point out the differences between the exciting and inhibitory ganglia in the medulla oblongata? These views do not modify the work of the localizationists. If inhibitory centers can be localized, I see no reason why the exciting centers are not localized. I think it may be held that the nervous system contains two kinds of gray matter, speaking in a physiological sense; one exciting, the other inhibiting; that the exciting ganglia have been localized; that the monarchical inhibitory centers are located at the base of the thalami and in the crura cerebri; and that minor inhibiting centers exist, especially in the spinal cord. Neither do these inhibitory phenomena invalidate sensory or motor decussation, so far as I can see. Paralyses, anæsthesiæ, and hyperæsthesiæ can be explained by an affection of the exciting or inhibiting gray matter or of the fibers proceeding from them. Appended are some of the experiments upon which the preceding statements are partly based.

Exp. I.—A kitten is etherized, and a section of the cerebrum is made on the right side, on a level with the corpus striatum. In walking, the animal falls on the left side. At 3.10 p. m., a second section is made on the right side of the brain, on a level with the tubercula quadrigemina, which greatly increases the paralysis on the left side. At 3.15 p. m., a third section is made on the right side of the pons Varolii, rendering the animal unable to stand up. At 4.30 p. m., it has more power over the left side than over the right.

Exp. II.—A cat, of medium size, is etherized, and a section of the brain is made on the right side, on a level with the corpus striatum, and a second section on the right side, on a level with the corpora quadrigemina, resulting in paralysis on the left side. After waiting about half an hour, a section of the pons Varolii is made, and the right side is paralyzed, while the left side has regained its power in great part.

Exp. III.—A large cat is etherized, and a section is made on the right side, on a level with the right corpus striatum, and a second section on the right side, on a level with the corpora quadrigemina. After waiting till the animal had recovered, paralysis was noted on the left side. A third right hemisection of the pons restored the power over the left side, and paralyzed the right.

Exp. IV.—A small kitten is etherized, and a section of the brain is made through the corpus striatum and the corpora quadrigemina on the right side, causing paralysis upon the left side. After waiting some time, a right hemisection of the pons Varolii is made, when paralysis disappears upon the left side, and appears on the right side.

Exp. V.—A rabbit is etherized, and a section is made of the right side of the pons Varolii, making the left anterior and posterior extremities hyperæsthetic, and the right posterior extremity anæsthetic. A hemisection of the left half of the spinal cord is now made, rendering the left posterior foot hyperæsthetic, and the right posterior foot anæsthetic.

Exp. VI.—A rabbit is etherized at 11.40 a. m., and a three-quarter section of the pons Varolii is made on the right side at 11.45 a. m. At 12.10 p. m., there is hyperæsthesia on the left side, especially in the left anterior extremity.

Exp. VII.—A rabbit is etherized, and a three-quarter section of the pons is made on the right side, just in front of the cerebellar crus, producing hyperæsthesia on the left side, the right side remaining normal. On left hemisection of the cord, the left posterior member becomes hyperæsthetic. The cord was hemisected at the junction of the lumbar and dorsal regions.

Exp. VIII.—A rabbit is etherized, and a three-quarter section of the right side of the medulla is made just behind the cerebellar crus, resulting in hyperæsthesia on the left side; after right hemisection of the cord, at the junction of the dorsal and lumbar regions, the left posterior extremity is anæsthetic, and the right posterior extremity, hyperæsthetic.

Exp. IX.—A rabbit is etherized, and a three-quarter section is made on the right side of the pons Varolii. After waiting an hour, there is hyperæsthesia on the left side; after right hemisection of the spinal cord at the junction of the dorsal and lumbar regions, there is hyperæsthesia on the right side, anæsthesia on the left.

Exp. X.—A small rabbit is etherized, and hemisection of the pons is performed on the right side, rendering the left side hyperæsthetic.

Exp. XI.—A small rabbit is etherized, and a right hemisection of the cord is made at the junction of the dorsal and lumbar regions. After waiting half an hour, a left hemisection of the medulla oblongata causes but slight movement or evidences of sensibility.

Exp. XII.—A small rabbit undergoes right hemisection of the spinal cord, at the junction of the dorsal and lumbar regions. After waiting some time, a left hemisection of the medulla oblongata is made, and no sensibility is manifested, and only a slight twitch in the left anterior extremity.

Exp. XIII.—A rabbit is etherized, and a right hemisection of the cord is made at the junction of the dorsal and lumbar regions. After waiting some time, the motor centers of the brain are laid bare, and, being irritated by means of a Du Bois's inductorium, the left side of the brain is found less excitable than the right.

Exp. XIV.—A rabbit has the right half of the pons Varolii divided, causing paralysis and anæsthesia on the same side. After waiting some time, a section of the cervical spinal cord is made, when more extensive movements ensue on the left than on the right side of the body.

Exp. XV.—A rabbit is etherized, and a right hemisection of the spinal cord is made at the junction of the lumbar and dorsal vertebræ, then a complete section of the spinal cord at the same place. The cerebral hemispheres being bared, the left hemisphere shows less excitability than the right.

Exp. XVI.—A rabbit is etherized, and section of the right sciatic is performed, then of the left. The cerebral hemispheres being bared, the left is found less irritable than the right.

Exp. XVII.—A rabbit is etherized, and right hemisection of the spinal cord is made, at the junction of the lumbar and dorsal regions. After waiting some time, the left hemisphere is found less irritable than the right.

Exp. XVIII.—A rabbit is etherized, and right hemisection of the cord is performed at the junction of the lumbar and dorsal regions. After waiting some time, the left half of the medulla is divided, and slight movement only ensues.

Exp. XIX.—A rabbit is etherized, and right hemisection of the spinal cord is made at the junction of the lumbar and dorsal regions; then the left half of the cord is divided. The hemispheres being bared, the left is less irritable than the right. Scooping out of the thalami caused rhythm of the sphincter.

Exp. XX.—A rabbit is etherized, and section of the right sciatic is performed, then of the left. After waiting some time, the hemispheres are bared, and the left is found less excitable than the right.

TWO CASES OF KNOCK-KNEE TREATED SUCCESSFULLY: ONE BY APPARATUS, AND THE OTHER BY OSTEOTOMY.

By EDWARD H. BRADFORD, M. D.,
SURGEON TO THE CHILDREN'S HOSPITAL, BOSTON.

Case I.—M. H., a girl four years old, came under treatment in May, 1877, for double genu valgum. She was a pale, delicate child, hardly able to walk, on account of the deformity of the legs. The epiphyses at the wrists and ankles were slightly enlarged, and the tibiæ were somewhat bowed forward. The chief hindrance to locomotion was the pronounced genu valgum, which, on examination, was found to be due to the fact that the inner condyles projected lower in the vertical axis than the outer. The legs were parallel when the limbs were flexed at the knee, but, when extended, an isosceles triangle was formed by the floor and the inner sides of the legs. The patella slipped to the outer side when the legs were flexed at the knee. There was no contraction of the outer hamstrings or of the external lateral ligament, so far as could be determined. An apparatus was applied, designed to take its points of support from the trochanter and the foot, and to pull the knee outward by straps. This was easily effected by a straight rod, which was fastened to the shoe below, and reached as high as the trochanter, on which it pressed, a padded plate being interposed. At the level of the knee were placed buckles and straps, which, being tightened at will, could exert pressure upon the inner condyle and the head of the tibia. To keep the upper part of the rods from moving out of place, they were secured by straps which, fastened together, girdled the pelvis. Soon after the application of the apparatus the child improved in the ability to walk (when the appliance was worn). The limbs were rubbed daily and sprung by the mother, who was directed to place a book between the child's knees, to grasp the ankles, and force the legs toward the middle line.

By the following October the limbs were found to be straighter, and there continued to be a steady gain. At the beginning of treatment, May, 1877, the distance between the inner sides of the feet, when the knees were placed in apposition and the legs extended, was 8 inches; in October, this was 6 inches; in April, 1878, 5½ inches; in November, 5 inches; in November, 1880, 2¼ inches. The apparatus was applied constantly until May, 1880, and there has been no relapse in the six months succeeding its removal. The progress of the case was carefully recorded by outline drawings made by placing the child upon a large piece of wrapping paper and marking the outline with a pencil. At the last examination, in November, 1880, the condyles were found in their normal relation to the joint, and the patella did not slip to the outer side when the limb was bent at the knee. The normal outline of the condyles was also demonstrated by pressing a strip of lead over the knee and marking its outline on paper. The child is now able to walk about as well as any child.

The apparatus was only worn in the daytime, it was never so tightly applied as to cause discomfort, and the child was allowed to walk about. The improvement appeared to be due to the actual growth of the limb in a straight direction, any increase of the deformity being prevented by the apparatus.

The child improved in locomotion rapidly after the apparatus was applied, and during the treatment walked much better with than without the appliance; hence the success seems justly attributable to its constant use, which prevented the child's weight from increasing the deformity, and aided the effect of growth in correcting it.

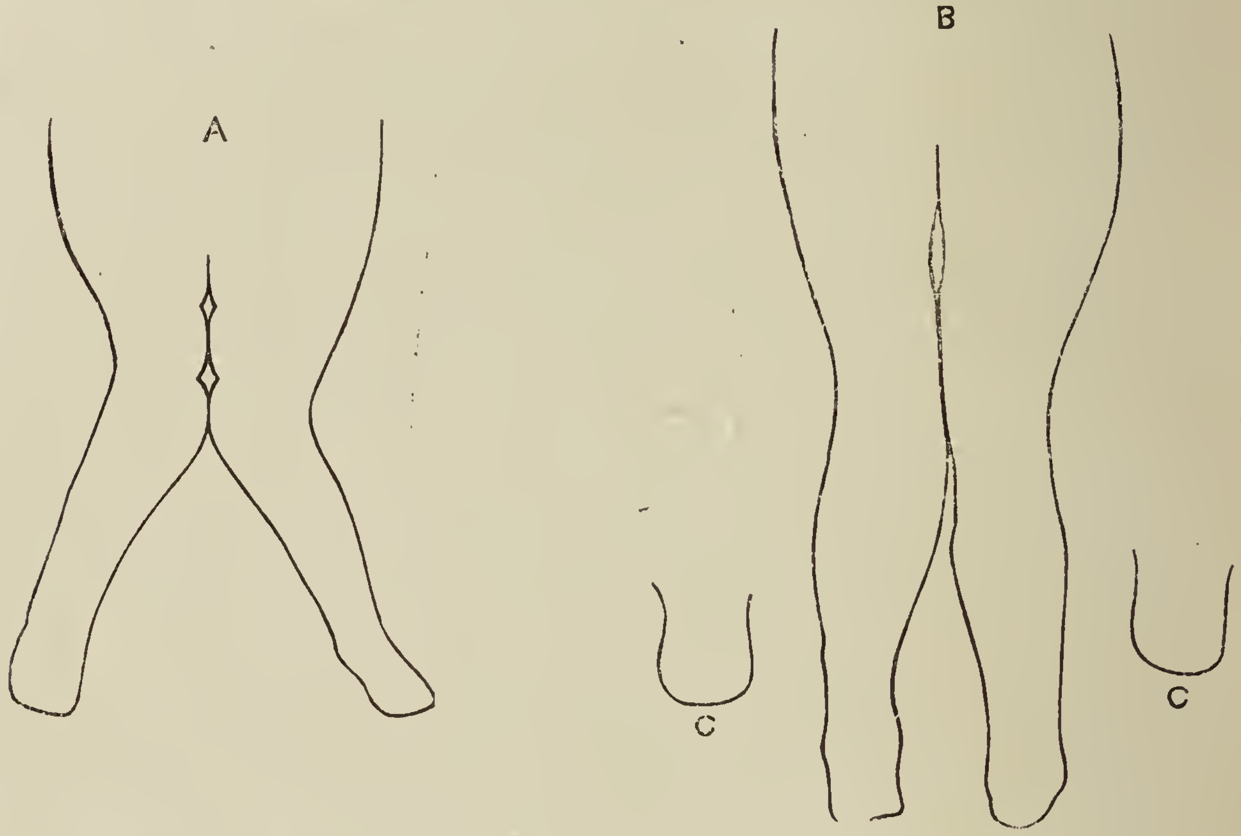

Fig. 1.—First case. A, before treatment; B, present condition; C C, present outlines of the condyles.

Case II.—G., a girl aged eleven, of small stature, with evidence of a previous rickety condition, in the shape of slight bowing of the femora and tibiæ; double genu valgum was present in a marked degree, and due, as was evident from the tracing, to a faulty relation of the internal condyle to the axis of the joint. The patella slipped to the outer side on flexion of the limb. The child enjoyed fair health, and locomotion was not interfered with by the deformity.

Osteotomy of the right femur was performed July 20, 1880. After a straight incision was made through the soft parts, a chisel was inserted at right angles to the incision, and driven into the femur to a depth of three quarters of the width of the bone. The limb was then straightened forcibly, fracturing the uncut portion of the femur. The operation was done under strict antiseptic precautions, a temporary gauze dressing was applied to the wound, and the limb was made straight and fixed by the application of a plaster-of-Paris bandage. A fenestra was cut in the bandage, the temporary antiseptic dressing was cut through and aid back on the bandage, and carbolized putty was packed in between the skin and the edges of the fenestra. A permanent antiseptic-gauze dressing was then applied. The temperature on the night following the operation rose to 100° F., but with this exception it was never above normal, and the wound healed without suppuration. There was no pain during the recovery. In three weeks the plaster bandage was removed, and the wound was healed. On August 20th, the left limb was operated on in a similar way, except that the bone was chiseled three quarters of an inch above the joint. The result was equally satisfactory, no fever or suppuration following. The plaster bandage was removed in four weeks, and a silicate-of-potassium bandage was applied to the limb (the one last operated on), and the patient was allowed to walk. Two weeks later this latter application was removed. The child remained a month under observation, walking and running about freely. The limbs are perfectly strong, and the girl is as active as any child. There is perfect motion at both knee joints; the condyles, which before the operation were not on a plane at right angles with the axis of the limb, are now normal, and the patella does not slip to the outer side on flexing the limb.

The distance between the inner sides of the feet, when the knees were in contact and the legs extended, was nine and a half inches; after the operation the limbs were perfectly straight, except a slight curve of the femora, which was not corrected.

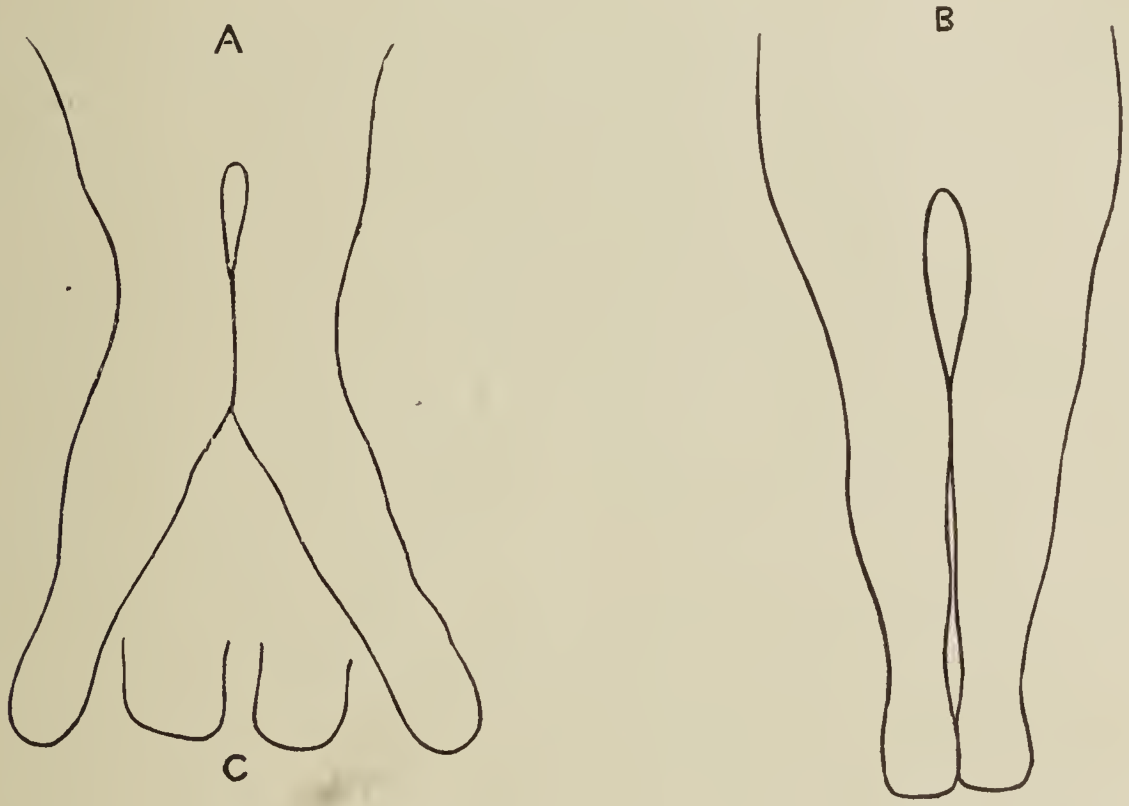

Fig. 2.—Second case.—A, before operation. B, present condition. C, outlines of the condyles before operation.

The method of operation is the one mentioned by Mr. MacCormac in his recent book on "Antiseptic Surgery," viz., partial section of the femur with a chisel inserted at the line of the epiphysis on the outer side of the bone, and fracture of the uncut portion of its thickness. Whether this method is superior to others recommended, is a matter which experience will decide. It was chosen because, if done with ordinary care, the joint is not opened, as by the Ogston or Reeves method, and a neater wound is made than that necessary for the removal of a wedge-shaped piece from the internal condyle. The limb is left free from distortion, as must follow a section of the femur on the outer side a hand-breadth above the joint (as recommended by Mr. Taylor in femoral curves), or in section of the tibia as done by Meyer and Schede.*

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* Dr. C. T. Poore, "Med. Record," May 29, 1880.

In the case here reported no disadvantage followed the wedge-shaped gap left by the fragments of bone when the limb was straightened. It was filled by a clot, and perfect consolidation followed without suppuration, organization taking place without displacing the clot, as is frequently seen in wounds under a thorough antiseptic dressing.*

NOTE ON A NEW ANTIPRURITIC REMEDY.

By L. DUNCAN BULKLEY, A. M., M. D.,
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The physician is often very sorely put to it to give relief to the symptom of itching which so frequently forms a prominent feature in certain skin diseases, and the most varied local measures will be used in many instances, with the result of aggravating the local irritation. Not unfrequently opium and morphine will be prescribed internally, in the hope of giving relief by inducing sleep, but in vain, for small doses are ineffectual in allaying pruritus, and, if the quantity be sufficient to induce a forced sleep, the patient often scratches in his sleep and awakes unrefreshed, having had tormenting dreams, during which there has been an incessant working at the diseased parts in the guise of some delusion of sleep. Chloral undoubtedly has very considerable value as an antipruritic, employed either internally or externally, and when taken in moderate doses in conjunction with bromide of potassium, and also with a little aconite, is often of the very greatest service. Belladonna, given internally, is spoken of as arresting itching in a measure, but the system must be under its full physiological effects to accomplish this Carbolic acid has likewise been given internally in prurigo, and is thought to control pruritus when taken in considerable quantity and for some time; but there are some doubts in regard to its real effect on the itching, and its action is certainly very slow.

Here the list of remedies used internally to quiet this distressing condition ends, and it is readily seen how few they are; indeed, chloral and bromide of potassium stand out almost alone, and the objections to their continued or too oft-repeated use need not be mentioned here. This field is one which needs cultivation, and one in which it would seem that there should be some progress made, and every contribution, however slight, has a practical value, not only in adding to the stock of remedies to be appealed to, but as indicating the direction in which thought should turn.

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* The outline drawings of the limbs were exactly copied, in a reduced form, by Dr. W. A. Winn, of Arlington, Mass., by means of an instrument made for that purpose.

In searching for a vegetable neurotic which would probably have the desired effect, I concluded that gelsemium, from the relief which it occasionally gives in spasmodic asthma, and in certain cases of neuralgia of the fifth pair, would possibly act as a nervous sedative on the skin. The physiological action of gelsemium is described as causing, among other symptoms, a sensation of numbness of the skin and a certain general languor or relaxation of the muscles. I have, accordingly, prescribed it for a considerable number of persons during the past two or three years, mainly those suffering from eczema, and am prepared to advise its use as an adjuvant for the relief of itching in certain cases. It must not be expected that it will always act efficiently, for it has failed in certain cases; though I can not tell under exactly what conditions it will succeed or not. The cases have been only in adults, and I should hardly yet be willing to give it to children or to those who were not able to watch its effects by their personal feelings in other respects than the itching. I have generally told the patients to take it in increasing doses, repeated every half hour or every hour, until the pruritus was relieved, or until some of the unpleasant symptoms were experienced.

The physiological effects of the drug may be judged from the following: * "A physician subject to supra-orbital neuralgia found that the tincture, gradually increased in dose, produced in him a very agreeable sense of languor and tranquillity, then slight dizziness, impairment of vision, and drooping of the eyelids; a feeling of numbness beginning in the scalp, and gradually extending to the upper and then to the lower extremities, followed by impaired motility, embarrassment of the respiration, and enfeeblement of the heart's action. A still larger dose intensified all these effects, produced marked vertigo, almost total blindness, and decided ptosis."

The smallest fatal dose, in the adult, is reported as two drachms of the fluid extract, and twenty-one drops of the same is recorded as the smallest fatal dose in children. It is also stated that small doses have sometimes produced alarming symptoms, although this appears to be very rare, and I have never known such in any of the cases in which I have prescribed it, nor among those of my household to whom I have frequently given it for toothache. I

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* "National Dispensatory," second edition, page 675.

have employed it in my office to give relief to a paroxysm of itching in eczema, and have questioned for unpleasant symptoms, but have failed to find them.

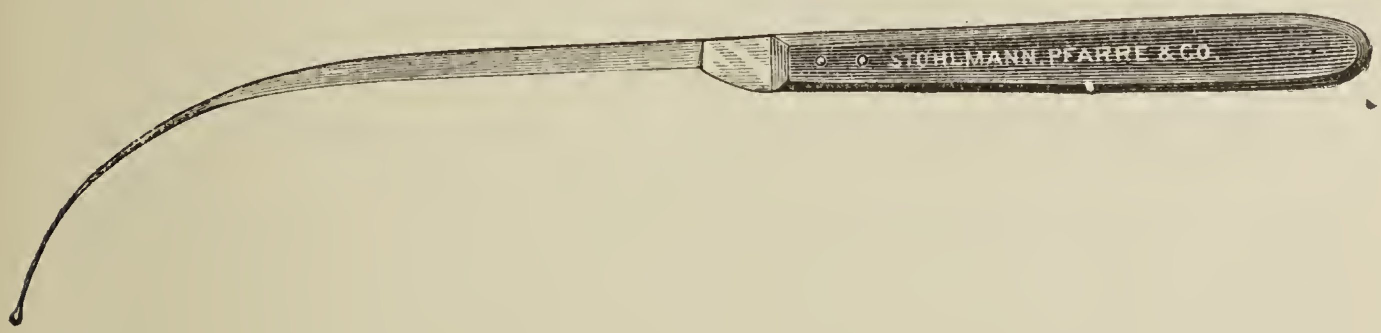
Thus far I have always employed the tincture, although the fluid extract appears to be most commonly used. From three to ten minims is stated as a medium dose of the fluid extract, repeated every two or three hours until some of the characteristic physiological symptoms are produced. In most of my cases I have begun with ten drops of the tincture, and, if in half an hour there was no apparent effect in relief of the itching, and none of the languor, I have had the remedy repeated in somewhat larger dose, as twelve or fifteen drops, and so on, until results were obtained, or until a drachm or so had been taken in two hours. I have never pushed it to any of the more severe symptoms, and have often found at least some measure of relief after the first or second dose.

The sensations described by patients correspond considerably to those quoted above from the physician who took the remedy to the degree of producing its physiological effects. I believe that most of the patients have taken it mainly at night, and I usually direct that the dose shall be prepared and taken immediately before going to bed. One lady, who had suffered intolerably from eczema of the genitals for a long time, combined at times with some eruption elsewhere, on whom chloral and the bromides had lost all soothing effect, and who obtained perfect rest from gelsemium, described the sensations fully. She expressed the feeling to be as of a wave passing over her first, with a thrill, as if something were circulating through the blood to every portion of the body, and then a sense of quiet or ease followed immediately, with an indisposition to move. There was no unpleasant sensation, absolutely no effect upon the mind, but she wanted to sleep from the relief which was obtained, and the sleep was spoken of as "delicious." In this instance the itching was largely confined to the genital region, deep in, and depended in part upon ulcerative disease, which was afterward found on the cervix uteri. The gelsemium was used by her with most excellent effects for a considerable period of time. Other cases might be mentioned in detail, but, as the subject would not be rendered clearer thereby, they are omitted.

A NEW KNIFE FOR FISTULA IN ANO.

By CHARLES B. KELSEY, M. D.,
SURGEON TO THE INFIRMARY FOR DISEASES OF THE RECTUM, NEW YORK.

In the operation for fistula, as ordinarily performed, the introduction of the director through the tract and bringing it out at the anus is the most painful step. The idea of the instrument represented in the accompanying cut was first suggested to me by seeing how often, in simple cases, the whole operation might be completed in an instant if the probe which is used to follow the tract in the first instance were only a knife, and if the director could be dispensed with; for, when once the probe is in the rectum, it may be brought out at the anus with little additional pain, and the parts are all ready to cut. With the instrument shown, it is often possible to operate without ether, and with no pain except that from a rapid cut with a sharp knife. The figure shows the instrument half size. It is simply a strong curved bistoury with a light silver probe welded to its end. There should be no shoulder where the probe joins the cutting edge. The knife, it is evident, is applicable only to the simpler cases of the disease.



Note.—Since this was written, my friend, Dr. J. L. Little, has called my attention to a plate in Heister's "Surgery," published in 1768, representing a much larger, sickle-shaped knife, but made on the same plan as this and intended for the same purpose. As the instrument seems to have been entirely discarded and forgotten, however, I have concluded to introduce it once more to the profession.

48 East Thirtieth Street.

Lectures.

THE CARTWRIGHT LECTURES

ON THE ANTAGONISM BETWEEN MEDICINES, AND BETWEEN REMEDIES AND DISEASES.*

By ROBERTS BARTHOLOW, M. D., LL.D.,
PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS IN THE JEFFERSON MEDICAL COLLEGE, PHILADELPHIA.

LECTURE I.

HISTORY OF THE SUBJECT; PHYSICAL BASIS OF THE PRINCIPLE; OPIUM AND BELLADONNA.

In this country, private beneficence, although vast in the extent of its exercise, is rarely directed to merely medical objects. Therefore, in opening this course of lectures, provided for under the bequest of the late Mr. Cartwright, it behooves us to honor the memory of the founder. In this gift, precious indeed on account of its rarity, the medical profession is offered a new opportunity, when such opportunities are few, for honorable distinction. The possibilities of this benefaction are great. The opportunity stimulates to the acquisition of new truths, and encourages the growth of a medical literature. Benefits inure to the memory of the giver. His name is perpetuated among the alumni of this great school, and they have it in charge to honor through all time. His benefaction is especially celebrated annually, and he is enrolled among the philanthropists who, by a wise dispensation of their wealth, have sought to promote the good of their fellow-men.

I esteem it a high honor to be called upon to inaugurate the Cartwright Lectures, and I am deeply indebted to the Committee for the kind partiality which led them to nominate me. I do not conceal from myself the difficulties of this position. The Cartwright Lectures will be expected to take and maintain an honorable position alongside of the Gulstonian, Lumleian, and other lecture courses, which have done so much for English medical science and literature. It will doubtless be expected of the lecturers to bring forward new facts, to develop new principles, and to throw new light on obscure but familiar topics. Brought into comparison with such standards, and confronted with the just expectations of the profession, it is but natural to apprehend that my effort will fall far short of a true ideal, and unhappily become a precedent for inferior performances in the future. After careful consideration, I have selected a topic for this course which has strong claims on the attention of physicians, and to which I have contributed some facts by recent researches. Accordingly, I have decided to ask your attention to the subject of the Antagonism between Medicines, and between Remedies and Diseases.

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* Delivered before the Alumni Association of the College of Physicians and Surgeons, New York.

By physiological antagonism is meant a balance of opposed actions on particular organs or tissues. As disease is a pathological physiology, so far, at least, as relates to function, the derangements produced by disease may be opposed by other derangements set up by medicinal substances. The antagonism, or opposition of actions, may extend throughout the whole range of effects, or it may be limited to a few points. Indeed, some of the most valuable instances of antagonism are thus limited, and there are few, if any, examples of antagonism, in which the opposition of actions is universal. In popular medical opinion, by the term physiological antagonism is meant an opposition of action of poisonous medicinal agents, in that the effects of the one may be exactly counterbalanced by the effects of the other. According to this conception of the subject, when a lethal dose of one agent is administered, the effects may be removed by an opposing agent so given as to produce exactly opposite effects. Therefore, the poisonous action ceases, because in the whole range of the effects of the two agents they are exactly antagonized. This conception of physiological antagonism is exaggerated—for such completeness of opposing action is as rare as exact similitude in remedies acting in the same way.

In an interesting discussion[*] of the problem of therapeutical antagonism, MM. Gubler and Labbée proposed to retain the word *antidotism* in accordance with its ancient signification. As, however, usage has restricted the employment of the word *antidote* to express chemical rather than physiological antagonism, it is better to adhere to the present nomenclature. Moreover, the word *antidotism* expresses the conception of a chemical combination of the opposing agents, and the formation of a new compound different in character from those entering into its composition, and without toxic power. Physiological antagonism means simply a balance of opposed actions on the same tissue. It does not include a change of structure. The opposing agents counterbalancing each other, the functional disturbance subsides and the normal equilibrium is restored.

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[*] "Bull. Gén. de Thérap.," vol. lxxxiv, p. 570.

Some such conception as our modern doctrine of physiological antagonism has existed from the earliest period. Various aphorisms of Hippocrates express it in most precise terms. Thus: "Diseases which arise by repletion are cured by depletion; and those which come from depletion are cured by repletion, and in general diseases are cured by their contraries." In another aphorism it is stated: "Some diseases are cured by contraries, some by similars"—an aphorism on which Carus based his famous saying, in his controversy with Hahnemann: "Whatever is new in homœopathy is not true, and what is true is not new." Although the practice of Hippocrates and his immediate followers was empirical, that is, based on observation and experience, they used, whenever the circumstances admitted, their favorite dogma of contraries. Some of the most famous teachers of the Alexandrian school—for example, Herophilus and Eristratus—opposed the doctrine of contraries. Galen was essentially a trimmer, for, while he practiced on the system of contraries, he spoke respectfully of the empiricists. There has been no period in medical annals when theories, and systems, and specialisms of all kinds were more numerous and distracting than in Galen's time. The only rational expedient applicable to medical practice at that time was the principle of contraries, which continued up to the revival of learning as the chief guide in therapeutics, how much soever other theories may have dominated in the schools.

About the middle of the sixteenth century, there was published by Jean Fernel, physician to Henry II, teacher of Vesalius, and the most celebrated physician of his time, an elaborate treatise on the fundamental maxim, "Every disease must be combated by contrary remedies." It is a curious circumstance that Fernel should attempt to prove that the law or doctrine of similars was only an application of its opposite or law of contraries. "Many men," he states, "conceive that this sovereign principle is annulled when it is affirmed that there are diseases which are cured by similars; but these persons do not reflect that such remedies, although apparently similar in their effects to the symptoms of the disease, are opposed to the causes which produced it, so that they destroy the disease by removing its cause; thus rhubarb, though heating, extinguishes fever by purging the matter which feeds the fire. A purgative arrests a dysentery by evacuating the peccant matter which causes and sustains it." The ingenious attempt of Fernel could not prevent the decline of the ancient doctrines, which had maintained universal sway for so many centuries. When that boasting pretender and iconoclast, Paracelsus, burned the works of Galen and Avicenna, the doctrine of contraries disappeared in the smoke. On the labors of the alchemists rose modern chemistry. With the new light afforded by the discovery of the circulation of the blood, and the progress of the knowledge of anatomy, new theories prevailed in therapeutics. The iatrochemical doctrine of the great Boerhaave, the animus of Stahl, the irritability of Cullen, and the sthenic and asthenic theories of Brown, for a time held sway within the range of influence of their respective authors.

The doctrine of contraries, then, quite disappeared amid the contentions of rival schools and professors. Next arose that eccentric and mystical reformer, Hahnemann, near the close of the last century, whose notions, tinctured with the spiriticism of Mesmer, were rendered still more visionary by the radical theories engendered by the French Revolution. Before that period, in his senility, when he developed his idea of the spiritual essence in medicine, Hahnemann's doctrine of similars was merely an application of the Hippocratic maxim. The law of similars was associated with the law of contraries in the Hippocratic system, and Fernel, in the sixteenth century, in expounding and defending the latter, showed its relation to the former. A little consideration must, I think, tend to the conclusion that, when a remedy acts in a similar manner to a disease, there must be an antagonism between the force of the remedy and the momentum acquired by the disease. The disturbance in the functions caused by a drug must interfere with the disturbance caused by a morbid process. If the actions were the same, the result of the combined impression would be an increase of the disturbance. As they are similar only, and proceed from different sources, there are, then, two forces acting on the same tissue or organs, and necessarily opposed in action. Any truth in the homœopathic law or doctrine of similars is not, therefore, new, as Carus well said, for, if there be similarity of action, it must of necessity be opposition.

The initial movement in the great development which has taken place in our knowledge of the physiological action of drugs was begun by Bichât. I can not too strongly insist on the importance of this epoch for a right understanding of the influences contributing to this development. When Bichât came on the scene, therapeutics was in an utterly chaotic state. To the previously existing wild theories of the iatro-chemists, the animists, and the contra-stimulant school, were added the vagaries of Hahnemann and of Mesmer. It is not surprising that he expresses a severe judgment: "Materia medica," says Bichât, "a collection of incoherent opinions, is perhaps, of all the physiological sciences, that which most exhibits the contradictions of the human mind. In fact, it is not a science for a trained intellect; it is a shapeless mass of inexact ideas, of observations often puerile, of imaginary remedies, strangely conceived and fantastically arranged. It is said that the practice of medicine is repulsive—I go further than this: it is, in respect to its principles taken from our materia medicas, impracticable for a sensible man." From Bichât dates modern physiology, for, although great acquisitions had been achieved before, it was not until he rendered general anatomy * possible that this science could proceed in the remarkable course of development which has since taken place. Here is the initial period in the rise of experimental physiology. Bichât died in 1802. Magendie was then passing through his course of study, and, brought under the influence of Bichât, was thoroughly indoctrinated with the ideas of that brilliant genius. Demonstrator of anatomy in 1805, a few years later (1808–'9) his important researches on physiological subjects began to appear. The first investigation by physiological methods into the action of a medicine was made by Magendie, the subject being the upas poison. This research became possible only after the functions of the spinal nerves had been correctly interpreted, a feat accomplished a short time before by Magendie. He next investigated the then new alkaloid, strychnia, and so successfully did he work out all the details that subsequent experimentalists have been able to add but little to his results. The first example of the physiological antagonism between a remedy and a diseased state was that between strychnia and paralysis, and this principle, based on Magendie's studies, was applied, not empirically, but with a conscious purpose, by a physician, after the publication of the great physiologist's results. I am the more explicit in stating this fact, because it is generally supposed that the employment of strychnia in these maladies was merely empirical or accidental. The physiological study of the actions of medicines has gone on actively since Magendie's time, but the question of physiological antagonism has not excited inquiry until within a few years past. The doctrine of contraries, without being distinctly formulated in men's minds, influenced therapeutics to a greater or less extent. The scientific application of the principle of antagonism to medical practice, I purpose to consider in detail in future lectures.

Taking up now for examination the special instances of antagonism between medicines, we find, so long ago as 1570, Pena and De Lobel relating that the overaction of belladonna, when given to allay thirst, was relieved by theriaca. Prosper, according to Giaco-

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* "Anatomie Générale, précédée des Recherches Physiologiques sur la Vie et la Mort," par Xavier Bichât, Paris, 1818. Two volumes, with a portrait.

mini, held that theriaca was an antidote to all poisons. Horatius, in 1661, states that a man poisoned by a teaspoonful of belladonna juice recovered after taking theriaca. In 1677 Faber narrated several cases of poisoning by belladonna berries, in which theriaca was partly successful. It is probable that theriaca was reputed to be an antidote to the poisons in general at this period, and was used in belladonna poisoning as in other forms of poisoning, but further observation demonstrated that it was especially adapted to belladonna poisoning. By the year 1810 considerable experience of an empirical kind had accumulated in regard to the antagonism of opium and belladonna; for we find that in this year Joseph Lipp published an inaugural thesis on the toxic effects of belladonna berries, and on the curative powers of opium. We owe to Graves, the great Dublin clinician, the first really scientific suggestion of an antagonism. He supposed that the state of the pupil would afford an indication in fevers of the need of opium or belladonna—the former to be given when the pupil was dilated; the latter, when it was contracted. Acting on this suggestion, Dr. Thomas Anderson,* of Edinburgh, employed belladonna against opium poisoning—a mydriatic against a myositic—with success. Two years subsequently, Dr. William H. Mussey,† of Cincinnati, seeing the account of Dr. Anderson's cases, tried the same expedient successfully in a case of attempted suicide with laudanum. In July, 1859, Mr. Benjamin Bell,‡ of Edinburgh, published an account of two cases, in which symptoms of poisoning produced by the subcutaneous injection of atropia were removed by considerable doses of morphia. Influenced by these results of Mr. Bell's, in December of the same year, Mr. Seaton,§ of Leeds, treated eight cases of poisoning by belladonna berries with opium—seven of the eight cases recovering. In January, 1862, Dr. C. C. Lee,‖ of Philadelphia, reported two cases, one of opium poisoning treated by belladonna, and one of belladonna poisoning treated by opium, the result a success in each case. Dr. Lee also entered into some detail on the literature of the subject, referring to the experiences of Anderson, Mussey, and Seaton, and to the adverse experiments of Brown-Séquard. During the same year (1862), the most important paper which had hitherto been published made its appearance from the pen of Dr. William F. Norris.¶ In this paper, the cases illustrating an antagonism of action between opium and belladonna, which had been previously published, were tabulated; and a full historical account of the subject, from which subsequent writers have drawn their information, and to which I am much indebted, is there given. In 1865 an admirable paper, based on clinical and experimental observations made at the military hospital for wounds and injuries of the nerves, and embodying the results of an immense experience, was published by Drs. Mitchell, Morehouse, and Keen.* In the following year (1866), Dr. Constantin Paul† published a monograph, supporting the view of the existence of such antagonism. Since this time the cases, papers, and monographs have so greatly multiplied that it would be impracticable to name them all in this historical review. I have collected all the published cases for statistical study, and will refer to the more important papers and monographs hereafter. The cases thus far published number one hundred and twenty of opium and belladonna poisoning, in which the one drug was used to counterbalance the effects of the other.

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* Braithwaite's "Retrospect," 1855, part xxx, p. 301.

† "Cincinnati Med. Observer," vol. i, 1856, p. 70. There were but two volumes issued of this periodical, when it was united with the "Lancet."

‡ "Edinburgh Med. Jour.," vol. iv, 1859, p. 1.

§ "Med. Times and Gaz.," Dec. 3, 1859, p. 551.

‖ "Am. Jour. of the Med. Sci.," vol. xlii.

¶ *Ibid.*, vol. xliv.

The history of this subject would not be complete without some reference to the opinions of those who doubt the existence of the antagonism, or disbelieve in it utterly. The opposition to the generally accepted view is based chiefly upon researches on animals. The most influential of these experimentalists is Brown-Séquard.‡ His observations have been made for the most part on guinea-pigs and rabbits. Bois § studied the effects of these agents on cats. He regards the following experiments as conclusive against the view that an antagonism exists. To a cat he gave a dose of morphia just less than sufficient to cause death; when entirely recovered from the effects of this quantity, he gave to the same cat a dose of atropia having effects just short of lethal. When a sufficient time had elapsed to insure complete recovery from that dose, he administered those quantities together, when the result was fatal. Camus ‖ investigated the action of the alkaloids of opium, and the antagonism of atropia and morphia, using cats and pigeons, while Onsum ¶ conducted his researches on frogs. In what mode soever, or on what animals, the investigations were conducted, the results were uniformly opposed to the existence of an antagonism. I may now anticipate so far as to say that the methods of investigation pursued were not free from sources of fallacy, and that the results obtained were largely vitiated. The most elaborate series of experiments on this topic, embracing animals and men, were those of Harley,* but his facts admit of a different interpretation from that which he has given them. His fundamental error consists in regarding as examples of antagonism only those in which the opposition of actions exists throughout the whole range of effects, which, as I have already stated, is hardly true of any known examples. While it is true that clinical experience strongly supports the belief in the existence of such antagonism, there have been published unsuccessful cases.

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* "Am. Jour. of the Med. Sci.," July, 1865, vol. l, p. 67. "On the Antagonism of Atropia and Morphia. Founded on Observations and Experiments made at the United States Hospital for Injuries and Diseases of the Nervous System."

† "De l'Antagonisme en Pathologie et en Thérapeutique," 1866. Pp. 92–115.

‡ "Jour. de la Physiol.," etc., tome iii, 1860, p. 726.

§ "Gaz. des Hôp.," 71, 1865.

‖ "Gaz. Hebdom.," 2 sér., xii, 32, 1865.

¶ "Schmidt's Jahrbücher," Band 128, p. 288, abstract.

Although opium and belladonna were the first, they are not the only examples of antagonistic action. In fact, we find that more perfect illustrations of antagonism have been discovered between other agents. A capital example of a remedy being applied in antagonism to a diseased state is that of strychnia. Magendie undertook the examination of the properties of this poison, demonstrated its mode of action on animals, and suggested its therapeutical application in opposition to certain diseased states. When Magendie's results were announced, M. Fouquier applied it in accordance with the deductions of experiment. Magendie, also, when the opportunity offered, used the agent as he had suggested its use, in the following comprehensive statement: "Medicine would, perhaps, derive great advantage from the knowledge of a substance whose property is to act on the spinal cord, for we know that many severe diseases have their seat in this part of the nervous system." Producing tetanic rigidity, the opposite condition to paralysis, it was suggested that it might prove useful in paralysis. I need not say that this suggestion was abundantly confirmed by clinical experience, and since that time many cases have demonstrated the correctness of the antagonism. Could any fact more strikingly prove the benefits derived from the physiological study of the action of remedies, and the applicability of the law or principle of antagonism to therapeutics? In the remarkable study of woorara made by Bernard, the pupil of Magendie, we have another illustration of the same fact. Woorara is a paralyzer; it destroys the irritability of the end organs of the nerves in the muscles, and as a paralyzer is used against the opposite condition, or spasm, in tetanus and in hydrophobia. In respect to the latter disease, woorara is the single remedy which has appeared to have a curative influence. These researches of Magendie and Bernard stand out prominently in medical history as the initiation of that course of physiological study of remedies which has yielded such important results, and ought to be sufficient in themselves to silence for ever the absurd cavils of the antivivisectionists.

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* "The Old Vegetable Neurotics," p. 280, and p. 291.

Taking the examples of physiological antagonism in their chronological order, the next one is that between atropia and physostigma. The first attempt to determine the existence of an antagonism, which had been suspected previously, was by Kleinwächter,[*] in 1864, who, in a case of atropia poisoning, used with distinct advantage a preparation of physostigma. The next observation consisted of a single experiment by Bourneville,[†] in which the effects of a supposed lethal dose of Calabar bean, introduced into the stomach of an animal, were counterbalanced by the subcutaneous injection of atropia. The account of this experiment did not appear until 1867, and was then interpolated in a memoir on the use of Calabar bean in tetanus. During the same year, I was engaged in some experimental investigations on the actions of atropia, and on its antagonists, with a view to the preparation of an essay to be offered in competition for the annual prize of the American Medical Association. This essay appeared in the volume of "Transactions" for 1869, and in it I distinctly asserted the existence of the antagonism, and submitted experimental evidence in its support. The following year, the remarkable paper of Professor Thomas R. Fraser[‡] appeared, on the antagonism of atropia and physostigma. In this paper, not only is the antagonism established, and its limits defined, but the method pursued is so admirable as to remain the model for all similar investigations.

The next study of the physiological antagonism of remedies is that of Professor Preyer, of Jena, the first part of whose elaborate treatise on prussic acid appeared in 1868.[§] In this, and in the second part which appeared two years later, Professor Preyer maintained that the actions of hydrocyanic acid and of atropia were opposed, especially as respects the effect of each on the respiratory function. This opinion has been much controverted by Drs. Lecorché and Meuriot,[‖] of Paris; Drs. Hare and Keen,[¶] of

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[*] "Berlin. klin. Woch.," 1864, p. 3, 369.

[†] "De l'Emploi de la Fève de Calabar dans le Traitement du Tétanos," Paris, 1867.

[‡] "An Experimental Research on the Antagonism between the Actions of Physostigma and Atropia." From the "Trans. of the Royal Soc. of Edinburgh," vol. xxvi, 1872.

[§] "Die Blausäure physiologisch untersucht." In zwei Theilen. Bonn, 1868.

[‖] "Arch. Gén. de Méd.," May, 1868, p. 529.

[¶] "Am. Jour. of the Med. Sci.," vol. lviii, p. 436. [Proc. of the Path. Soc. of Phila.]

Philadelphia; Professor Schroff, of Vienna; Professor Boehm,* of Dorpat; and myself.† In a subsequent paper, ‡ Professor Preyer pays his respects to all of us in turn, and maintains his own position with fresh arguments and illustrations.

In 1869 MM. Schmiedeberg and Koppe isolated, defined the properties, and studied the antagonisms of muscarine, the alkaloid of agaricus muscarius. They conclude that the effects of muscarine are similar to those of physostigma, and that it is like the latter, also, in being an antagonist to atropia. In 1869 the remarkable memoir of Dr. Oscar Liebreich, § in which he announced the discovery of chloral, appeared, and soon after the same author demonstrated the antagonism of chloral and strychnia.

A notable event, in connection with the history of this subject, was the appointment of a committee by the British Medical Association "to investigate the antagonism of medicines." ‖ The committee was composed of Dr. J. H. Bennett, the great Edinburgh clinician, Dr. McKendrick, physiologist, and Dr. Alexander Bennett. Their researches included the supposed antagonism of strychnia and chloral; atropia and Calabar bean; chloral and Calabar bean; muriate and meconate of morphia and Calabar bean; sulphate of atropia and meconate of morphia; theine, caffeine, and guaranine and meconate of morphia; Calabar bean and strychnia; and bromal hydrate and atropia. The next year, Dr. Milner Fothergill ¶ made a report to the British Medical Association on the antagonism of aconite and digitalis. Soon after the introduction of pilocarpus (jaborandi) and the isolation of its alkaloid—pilocarpin—the antagonism of this agent with atropia was shown by Vulpian. ** An extensive research into the general subject of physiological antagonisms, and including special investigations into the antagonisms of chloral, was lately undertaken by Professor Husemann, the results being published in 1877. Beside these, several memoirs of a polemical character have appeared within a few years past. Of these I may mention the papers of Knapstein,††

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* "Ueber die physiologischen Wirkungen der Blausäure und den angeblichen Antagonismus von Blausäure und Atropin." "Arch. f. experiment. Pathol. u. Pharmacol.," Band ii, p. 129.

† Prize Essay.

‡ "Die Blausäure physiologisch untersucht," Band iii, p. 381.

§ "Das Chloral Hydrat, ein neues Hypnoticum und Anaestheticum," etc., Berlin, 1869.

‖ "Brit. Med. Jour.," Jan. 25, 1875. [Report of the Committee.]

¶ *Ibid.*, 1876.

** "Gaz. Hebdom.," 6, 1875, p. 81.

†† Knapstein, Adam, "Berlin. klin. Woch.," 47, 1878, p. 691.

Heubach,[*] and Kay,[†] in addition to those already referred to. To such importance, indeed, has this subject attained, that no research into the physiological action of a remedy is complete until its range of antagonisms has been determined.

From this brief history of the rise and development of the subject, we may now turn to the examination of the facts which support the doctrine of the antagonistic action of remedies. As we have seen, the therapeutical conception which has obtained the widest and most enduring influence is that of the doctrine of contraries. The clinical experience, which under the crude and imperfect methods and the slender knowledge of past times led to such conclusion, must have been occupied with decisive examples of the applicability of such a principle. We certainly encounter many such examples in the medical practice of to-day. We might indeed be content with the confirmatory evidence which is afforded by carefully conducted clinical observations. There is, however, independent testimony of another kind. The doctrine of physiological antagonism—of an opposition of actions—finds its strongest support in the mechanism of many functions. Let me ask your undivided attention to these important facts. In the brain are centers for the inhibition of reflex movements. The maximum amount of stimulation both increases and generalizes reflex action, if communicated to the same part of the spinal cord; but, if a sensory nerve at some distant point is irritated at the same time, the reflex action which would have been produced by the first stimulation is completely and entirely restrained or *inhibited.* Here an opposition of actions suspends activity, or, to express the fact in technical language, reflex actions are inhibited or suspended when coincident impressions from different sources are made on the nerve centers. An illustration of this fact is afforded in the arrest of singultus by a faradaic current applied to the integument of the chest or abdomen. If, at the moment the spasm of the diaphragm is to take place, a strong faradaic current be passed, no attack occurs. This arrest of the impending spasm is due to the simultaneous impressions made on the spinal center concerned—one from the strongly irritated nerves of the skin; the other from the diaphragm, the seat of spasm.

In the medulla oblongata is situated a center of extreme reflex sensibility—the spasm center of Nothnagel, and above it is an inhibitory center of reflex movements—Setschenow's inhibitory center. If there were not some antagonist to the spasm center, every trifling peripheral irritation would produce most extravagant reflex effects. An intimation of the wild irregularities which would ensue, if there were no inhibiting control of reflexes, is afforded in the abnormal readiness to react to impressions when the influence of the cerebrum is withdrawn from the medulla oblongata and spinal cord, these organs acting independently. In the cardiac and respiratory mechanism we have admirable illustrations of opposing forces producing order and rhythm. The movements of the vessels are regulated by a vaso-motor center in the medulla. The vascular tonus is affected by the condition of this center and its associated nerves. By the opposed action of the dilator and constrictor forces, the vascular tonus is maintained at the normal. A similar mechanism controls the cardiac movements; there is a motor apparatus for carrying on the action of the heart, and a regulator apparatus for restraining the movements within proper limits. The manner in which the action of the heart may be affected by opposing forces is admirably shown in the simple experiment with cold and heat. Lay a turtle's or frog's heart on a metallic plate—it will continue to act rhythmically for some hours. Cooling the plate with ice slows the heart, and will presently arrest its movements; then, on applying the heat of the spirit lamp, it begins to pulsate again, and presently, under increased warmth, acts more and more rapidly. Expose the heart of a frog in the usual way, remove it entire, then drop upon it a minute quantity of serum containing a trace of muscarine—the heart will be arrested in diastole. On adding to the heart a few drops of serum containing 0·2 per cent. of atropia, the pulsations begin again and go on energetically.

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[*] "Arch. f. experiment. Pathol. u. Pharmacol.," Band viii, p. 31.

[†] C. Chr. Kay, "Ueber den Antagonismus zwischen Opium und Belladonna." Inaug.-Diss., Jena, 1866.

The reciprocity of action provided for in the nervous apparatus of the heart and blood-vessels serves to restrain variations in the blood pressure, and to keep them within safe limits. If the arterioles of the body suddenly dilate, the blood pressure as quickly falls, but danger to the circulation is prevented by an increased action of the heart. Conversely, when the blood pressure is high, the inconvenience which would result is compensated for by the slowing of the heart. Here opposing forces maintain an equilibrium, or the normal. Similar regulating mechanism coördinates the respiratory, cardiac, and vaso-motor movements. Variations in the blood pressure and in the pulse occur with respiration, the pulse quickening during inspiration, and slowing during expiration. In the movements of inspiration and expiration; in the tidal flow of secretion and excretion; in the tonic contraction of the sphincters; in the action of antagonistic muscles, etc., we have exhibited the beneficent purpose in opposition of action.

The same principle obtains in physics. The undulations by which light and sound become cognizable by our senses are, probably, similar to those by which impressions and impulses are transmitted along nerves. I need not inform this audience that when rays of light interfere there is darkness, and that when rays of sound interfere there is silence. Interference means meeting in opposition of phase: when the crest of one wave coincides with the depression of another, the surface becomes even. When two bodies of equal weight and momentum come together from opposite directions, both are arrested at the point of impact. The physical force, electricity, exists in a neutral or unexcited state, when the equilibrium of positive or negative remains undisturbed. When the equilibrium has been ruptured, and the two modes of electrical force are separated, they combine, when afforded the opportunity to do so, and restore the equilibrium. In chemistry, also, do we find that opposition of action, combination of opposing forces, and the formation of new substances are constantly going on. But why multiply examples? Nothing can be more evident than that the principle of antagonism prevails widely. In the facts supporting this doctrine which I have brought before you, there would seem to be a justification for the doctrine of antagonisms. We can now proceed with confidence to the study of individual examples. As the question was first concerned with opium and belladonna, it is most fitting to commence with the consideration of their supposed antagonism.

OPIUM AND BELLADONNA.

In the observations to follow, morphia and opium, atropia and belladonna, will be used synonymously.

The investigation of the opposing actions of medicines resolves itself into two inquiries: Does the antagonism exist? What is its nature? The facts which have been accumulated supporting the doctrine of an antagonism between opium and belladonna are clinical. The experimental facts are negative, or are not conclusive for or against the antagonism. The paper of Dr. Norris was the first attempt to collect and tabulate the results of clinical experience to that date. I have collected all the recorded cases which have occurred since, and have added some unpublished cases, and two which were unknown to Dr. Norris, or escaped his search. The table of Dr. Norris began with the cases of Dr. Thomas Anderson, which occurred in 1854. During the same year (1854) Dr.

W. Lauder Lindsay * reported two cases of opium poisoning, treated successfully by belladonna, and in 1857 Dr. Sibson † published a case in which opium and belladonna were taken together, the effects of the one being neutralized by the antagonistic action of the other. The total number of cases of opium and belladonna poisoning, treated with the antagonist, is 120, of which 15 proved fatal, being 12·5 per cent. of failures. These statistics, considered apart from any other question, certainly indicate that the remedy exerted a favorable influence of a curative kind—something more than a *post hoc.* As, in almost all cases, doses of the poison unquestionably lethal were administered, the agents used must have averted death. In very few cases was the antagonist only administered. The part played by emetics, the stomach-pump, coffee, ambulation, faradism, etc., when these were used as well as atropia or morphia, must be estimated. The history of fatal cases is peculiarly instructive. It is necessary to know why the antagonist failed to exert its power. If, in a case in all respects appropriate, the antagonist, without an adequate explanation, proved useless, the antagonism does not exist. The success of a remedy used with a number of other remedies may be apparent and not real. It is, therefore, highly important to study the cases which proved fatal. Not to weary your forbearance too greatly, I condense the histories into the smallest possible space.

Unsuccessful Cases.

CASE I (Reported by Dr. Ludwig Pollak. "Wiener med. Presse," xi, 28, 1870). —A physician, aged sixty, who had experienced four years before an apoplectic seizure, but of robust constitution, took, with suicidal intent, 0·36 gramme (about five grains) of atropia. At the end of six hours he was in a condition of profound insensibility, with labored respiration, expiration blowing; the conjunctivæ injected, corneæ glazed, pupils dilated to their utmost; and urine and fæces passed involuntarily. A syringeful of morphia solution, strength not stated, was then injected. As this had no influence on the pulse, respiration, or pupils, another injection, half the first amount, was given. Death occurred in fifteen hours after the poison was taken.

Commentary: The condition of the brain, the large dose of the poison taken, the length of time which elapsed before the antagonist was administered, but especially the inefficient method followed, serve to explain the untoward result. If we assume that the morphia solution had the usual strength, and that the syringe was of the usual size, the amount administered could not have exceeded two grains. The proper mode of introducing the morphia in such a case was to inject one fourth to one half a grain every twenty minutes, until some movement in the pupil, or change in the respiration, indicated that the antagonistic action was being exerted. Then the result of the antagonism could have been awaited for a time. Having had a cerebral hæmorrhage, it is probable that additional mischief was done by atropia.

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* "Assoc. Med. Journal," 1854.

† *Ibid.*, Oct. 24, 1857.

Case II (Reported by Mr. James Seaton. "Med. Times and Gaz.," Dec. 3, 1859).—This was one of ten cases of poisoning by belladonna berries. Opium was used in all of the cases requiring treatment, with success, except the fatal case. S. W., aged fourteen, ate an unknown quantity of the berries, which produced dryness of the mouth, dilatation of the pupil, and delirium. At the expiration of twelve hours the child vomited, and was then ordered eight minims of the tincture of opium every two hours. After taking 16 minims, the dose was increased to 12 minims every hour until she had taken 60 minims. The opium was then suspended, and the whole amount taken was given after the first twelve hours, and before the expiration of twenty-four hours. During this period, the delirium was diversified by attacks of unconsciousness. At the end of twenty-four hours, she passed into a condition of insensibility, and died at the expiration of twenty-nine hours from the time of eating the berries.

Commentary: The whole amount of tincture of opium taken (72 minims) was about equivalent to three grains of crude opium—an amount entirely inadequate to counterbalance a lethal dose of belladonna. Furthermore, the administration of the antagonist was suspended when most demanded by the violent symptoms of belladonna poisoning. The lesions discovered at the autopsy, however, quite explained why death should occur despite the administration of an antidote. The heart was found pale and flabby, and the pleural surfaces adherent throughout.

Case III (Reported by Dr. Samuel W. Gross. "Am. Jour. of the Med. Sci.," Oct., 1869, p. 401).—Mrs. H., a stout woman, aged forty-three, took at 8.20 A. M. four pills containing three grains of atropia, by mistake of the druggist. In a half hour she had lost control of her limbs, was deeply flushed and delirious, the hallucinations consisting in her thinking she was shopping, sewing, nursing a child, etc. This pleasant delirium lasted about ten minutes, when she sighed, yawned, and then fell into a deep sleep, and at 10 A. M. could not be roused. An enema and a number of emetics were administered. At 11.15 one of the several physicians reported that Mrs. H. was unconscious—eyes closed, pupils dilated, muscular system relaxed, except of the jaw, which was in a state of trismus, so that it was very difficult to get anything into the stomach; respiration labored, pulse good. Half a grain of acetate of morphia was then given. At 11.40, Dr. Gross states, the muscular system was relaxed, the trismus having passed off; the skin was cool and moist; pulse 106; respiration 26 and heavy without stertor; the countenance somewhat livid; the conjunctivæ injected; pupils dilated three fourths and insensible to light; the eyes fixed, with a brilliant stare; the roof of the mouth, the tongue, and the soft palate were parched and glazed; deglutition was impossible, and the attempts to introduce remedies by the mouth brought on suffocative attacks. Half a grain of sulphate of morphia was then given subcutaneously. The effect of this was a scarcely perceptible contraction of the pupil, reduction of the respiration to 20, slight stertor, no change in the pulse. The stomach-pump was then used, the faradaic current was applied, and artificial respiration was carried on. After the stomach was washed out, whisky and ammonia were injected. At 12 M., a third injection of a half grain of morphia was inserted under the skin. In fifteen minutes the respiration was at 14, but very decidedly stertorous ; the pulse 102, full, but rather weak. On account of the stertor, no more morphia was given, and the treatment subsequently consisted of flagellation, artificial respiration, and faradization. Whenever artificial respiration was suspended, the breathing became labored, and threatened to cease entirely. At 6.30 P. M., however, the breathing became more natural, and at 7.45 all the measures were suspended, as the patient appeared to be in a quiet sleep, respiration 18, pulse 108, weak, but of pretty good volume. At 8.45 P. M. the respiration increased, râles became audible in the chest, the face turned livid, and respiration was about to cease, when the measures before used were resorted to, and veratria ointment was in addition vigorously rubbed in over the spine and chest. At 9 P. M. the pulse was at 128, respiration 28, and she executed various voluntary movements when hurt by the flagellation. At 10 P. M. she cried out, " Oh, my ! " and turned on her side. At 11 P. M., in response to the question, she replied that she was " better." Artificial respiration had been kept up at intervals. Some urine was drawn off, and a small quantity was injected into the family cat, producing decided dilatation of the pupil. At 11.10 P. M. symptoms of suffocation suddenly set in, and, notwithstanding the vigorous application of the methods before used, she soon expired. At the autopsy, the superficial veins of the body were found gorged, and there were extensive suggillations posteriorly. The veins of the brain were very full, there was much serum in the sub-arachnoid space, and the cerebral tissue was generally softened [by imbibition, probably]. The lungs were deeply congested, and the tissue of the heart was soft and easily torn.

Commentary : Although I have placed this among the unsuccessful examples of atropia poisoning treated by morphia, it can only be so regarded with some distinct limitations. The quantity of morphia required to antagonize such a dose of atropia is hardly less than six grains. The first injection was given in three hours after the atropia was taken, the last one in four hours, and nearly twelve hours before death. After the first injection the pulse was reduced to 108, the trismus had ceased, the skin was cool and moist, and the respirations were 20, without stertor. These were very favorable indications, and were produced by one half a grain of morphia only. Under these circumstances, it seems to me it would have been better to await the further antagonistic action of morphia, for, although the amount given was insufficient to antagonize the quantity of atropia taken, it will be shown hereafter that the condition of the respiration and circulation was such as to justify the belief that the antagonism was sufficient. Furthermore, by this time, no inconsiderable part of the atropia had been eliminated, as proved by the effect of the subcutaneous injection of the urine in the cat. It is not a little important, as I shall hereafter demonstrate, to note the rate of elimination of the poison as a factor, before deciding on the quantity of the antagonist to be used. Another element in this case, that goes far to impair its value as a negative fact, is the condition of the heart. The patient was a rather obese subject, and hence it is probable the heart muscle was in a state of more or less advanced fatty degeneration. The fatal result, at last, appears to have been caused by failure of the heart.

Case IV (Reported by F. A. Southam, M. D. "Brit. Med. Jour.," June 8, 1878, p. 824).—A man, aged thirty-eight, had taken two ounces of laudanum eighteen hours before treatment was instituted. He was then in a state of profound coma, the pupils were contracted to the size of pins' points, the conjunctivæ were insensible, the respirations were four a minute, the pulse was very quick and irregular. The treatment consisted in the application of heat, artificial respiration, faradization, and the hypodermic injection of atropia. The patient received in all five injections, of $\frac{1}{36}$ grain each—the first at 7.30 P. M., the second at 7.45, the third at 8.30, the fourth at 9.30, and the fifth at 9.45 P. M., the man dying at 10 P. M. The immediate effect of each injection was to raise the respiration to near normal, and to improve the tone of the pulse, but the effect was brief and lessened with each injection. Extensive congestion of the lungs was found after death.

Commentary: This case is complete in all the terms of the problem. The poison was entirely absorbed, and there were no complications or accidents to affect the result. An obvious deficiency existed in the treatment, however. The good accomplished by each injection was most conspicuous, but the impression made was so transient that no effect remained over to the next dose. As the whole of the poison taken probably remained in the blood, the function of excretion being suspended by the narcotism, the whole amount of atropia administered should have been given at one dose, and repeated according to necessity. In a case almost exactly similar, except that the quantity of laudanum taken was somewhat less, Dr. Milner Fothergill gave at once one grain of atropia sulphate, with entire success. It is evident that the quantity of atropia administered was not sufficient to antagonize the opium, although the return of the reflex sensibility, the improvement in the respiration, and the dilatation of the pupil indicated that a counterbalancing action was exerted, if only for a brief period. The long duration of the toxic symptoms before the administration of the antagonist was not without influence, for the carbonic-acid narcosis and the congestion of the lungs were developed when the respirations were only four a minute. Nevertheless, an efficient administration of the antagonistic would have secured a favorable result.

Case V (Reported by Dr. G. E. Paget. "Brit. Med. Jour.," Sept. 15, 1877, p. 374).—A child, three and a half years old, received an unknown quantity of laudanum, but only sufficient to cause, in two and a half hours, a drowsy look. The pupils were very small. The drowsiness increasing, notwithstanding vomiting, strong coffee, and ambulation, $\frac{1}{100}$ grain of sulphate of atropia was injected in four hours after the poison had been taken. No effect being produced by this, another injection of $\frac{1}{200}$ of a grain of atropia was inserted. After this the pupil slowly dilated, and, in an hour and a half, had attained extraordinary size, but notwithstanding this the stupor deepened into coma. In five and a half hours, the appearance of the child was almost death-like. Artificial respiration was diligently applied for many hours; and at the expiration of twenty-four hours, decided improvement was manifest, but unfortunately proved temporary. Four hours after the pupils became affected by the atropia, they had regained their natural size. Death ensued in twenty-eight hours after the poison was taken.

Commentary: The important fact in this case is, the predominant effect of atropia on the pupil, and the apparently slight effect on the pulse, respiration, and cerebrum. The quantity of laudanum swallowed being unknown, no guide, except the state of the functions, existed for the administration of atropia. It is probable indeed that the first injection of atropia was sufficient, as after the expiration of four hours, the child was merely "drowsy." The lividity, death-like pallor, and coldness of the extremities came on after the second injection. The report further states that, "while he was in the heavy stupor, his arms were several times extended in tonic spasms, and his eyes now and then squinted divergently." At this time "his pupils were so dilated that scarcely a part of the iris could be seen." As atropia produces more or less tetanizing action, it is probable that the tonic spasms were produced by it. From this point of view, the action of the opium being slight, it would have been better to await the influence of the first injection. Death occurring, probably from exhaustion, in twenty-eight hours, would seem to be a not unnatural result of the poison, the artificial respiration, the emetic, the ambulation, the flagellation, the atropia, etc., acting on the system of a child three and a half years old.

Cases VI and VII (Reported by Dr. F. L. Haynes. "Phila. Med. Times," Sept. 14, 1878).—Two cases of opium poisoning—the first by a half-ounce of laudanum; the second by an ounce of crude opium. In the first case, there were two injections of atropia—one of $\frac{1}{19}$, the other of $\frac{1}{38}$ grain, without effect on the respiratory function. The amount of the antagonist was much too small. In the second case, there were four or five doses of $\frac{1}{20}$ of a grain of atropia, equivalent to one fourth of a grain in the aggregate, to antagonize an ounce of crude opium. It is merely necessary to state the facts to demonstrate the source of failure, if there were no other unfavorable conditions present.

Case VIII (Reported by Dr. James Johnston. "Med. Times and Gaz.," Sept. 7, 1872).—A man, aged thirty-two, took three drachms of the extract of opium at 8 P. M. At 11 P. M. he was profoundly comatose; pulse 121, weak and irregular; reflexes abolished. At 1 A. M. a quarter of a grain of atropia was injected. At 3.30 A. M. the face was slightly flushed and the pupils were dilated; pulse 130, weak and intermittent. At 9 A. M. another injection of the same quantity was inserted. Respiration was then softer, pulse still very weak, but he could be roused slightly, and he swallowed a little ammonia and coffee; but he gradually failed, and died at 5 P. M.

CASE IX (same source. *Loco citat.*).—A girl of sixteen received ten drachms of extract of opium. Six hours afterward the stomach-pump was used, and a half grain of atropia was injected. In an hour the pulse was almost imperceptible, and death ensued in two hours after the atropine was inserted.

CASE X (same source. *Loco citat.*).—A man, aged thirty-eight, took three drachms of the extract of opium at 10 A. M. At 3 P. M. he was comatose, with stertorous breathing, and the pulse was weak and irregular. One fourth of a grain of atropia was given, after the stomach had been thoroughly emptied by the pump. At 4.30 P. M. the pupils suddenly dilated to a great extent, the respiration became hurried and irregular, and the pulse ceased at the wrist, death occurring at 5.30 P. M.

CASE XI (same source. *Loco citat.*).—A woman, aged seventeen, took an unknown quantity of opium, and was found in a state of profound coma, pulse 150, respiration slow and stertorous. Half a grain of sulphate of atropia was then injected, and artificial respiration was carried on, but without effect.

CASE XII (same source. *Loco citat.*).—A woman, aged thirty-six, took two drachms of extract of opium at 8 A. M. At 1.20 P. M. she was drowsy, but could be roused up to walk about, and was vomited by sulphate of zinc. At 2.20 P. M., severe coma setting in, the cold douche was used, and at 3 a half grain of sulphate of atropia was injected. At 4, the face was slightly flushed, and the pupils were dilated a little, but, at 5, convulsions of the extremities and face began, and she died at 5.30 P. M.

CASE XIII (same source. *Loco citat.*).—A woman, aged twenty-seven, took a half ounce of extract of opium at 9.30 A. M. At noon the stomach-pump was used, and a half grain of sulphate of atropia was injected. She was then in a profound coma, with stertorous breathing, her pulse was small and quick, her lips livid. At 3 P. M. convulsions set in, and death ensued in a few minutes.

Commentary: The six fatal cases, from the eighth to the thirteenth, inclusive, were reported by Dr. James Johnston, of the Chinese Hospital, at Shanghai, who has had unequaled opportunities of clinical experience in opium poisoning. He thus comments on the fatal cases: "Of the fatal cases in which atropine was used, the first one reported lived for eighteen hours, and the action of the atropine was very manifest, as the patient partially recovered consciousness, and did not perish from the comatose effect of opium, but from exhaustion following that condition. In the second fatal case, the patient was only two hours and a half under treatment, and died from cerebral apoplexy. The third was under treatment a little over two hours, and died from cerebral effusion. The fourth was two hours under treatment, and died from exhaustion. The fifth was under treatment for five hours, and died in convulsions. The sixth also died in convulsions, and was under treatment for three hours and a half." To these criticisms we may add that there was no proper adjustment of the dose of the antagonist to the effect of the poison, and that in two of the cases the atropia was without effect, owing to the depth of the narcotism and the suspension of absorption. As the experience of Dr. Johnston is quite unprecedented in respect to opium poisoning, I quote his opinion of the value of atropia as an antidote: "The class of cases in which the wonderful powers of atropine as an antidote to opium poisoning are most marked is where profound coma exists; and, for such a condition, I know of no other remedy. You may try to drag the patient about, use the cold douche, carry on artificial respiration assiduously, give stimulants of every description; all in vain—the patient remains comatose and lifeless. Administer atropine, and the effects are marvelous: the pupils dilate; the face becomes flushed; the respiration loses its stertorous character, and becomes slow and tranquil; the pulse is diminished in frequency, and becomes stronger; the patient slumbers peacefully for several hours, and at last wakes up conscious."

Case XIV (Reported by Dr. H. C. Wood. "Phila. Med. Times," Aug. 9, 1873).—A man, aged sixty-three, received for an attack of cholera morbus 1½ grain of morphia and 1¼ grain of opium. For the opium narcosis which ensued, there were administered fourteen injections of atropia, aggregating ½ grain. The last injection was administered twenty-four hours before death, which ensued in twenty-eight hours after the ingestion of the poison.

Commentary: The probable existence of an underlying morbid state and the exhaustion caused by the cholera morbus must be taken into account in estimating the precise share of atropia in the result. Such a case is, indeed, of small value for determining the existence of an antagonism between, or the opposed action of, atropia and morphia, owing to the uncertainty which must attend the relative influence of the several factors concerned.

Case XV (Reported by Dr. Beddoe. "Lancet," July 16, 1870).—A woman, aged sixty-eight, swallowed a teaspoonful of belladonna liniment at 11 A. M. Emetics and the stomach-pump were used without effect. At 2.45 P. M. she received twenty minims of laudanum, and soon after an injection of one third of a grain of morphia acetate. Previous to this, she could still swallow fluids, and, although delirious, could understand what was said to her. At 3.30 P. M. the morphia injection was repeated, one fourth of a grain being given. She was then reported to be less active in her movements, and seemed more drowsy. After the last injection she became comatose, and breathed stertorously if undisturbed for a few moments. Her pulse was then 100, and of good strength, and the pupils were widely dilated. At 4.30, a third injection of morphia—one third of a grain—was given. At 6.15 P. M. she was decidedly comatose, and ceased to breathe unless artificial respirations were kept up. At 3 A. M., sixteen hours after taking the poison, she died. The autopsy disclosed venous hyperæmia of the brain and lungs.

Commentary: The strength of the belladonna liniment of the British Pharmacopœia is four times that of the extract of the leaves. The patient being able to swallow without difficulty three hours after the ingestion of the poison, and, although delirious, returning correct replies to the interrogatories addressed her, indicate that the toxic effect was not great. Under these circumstances, small doses, only, of the antagonist were proper. When decided stupor followed the second injection, the third should have been withheld, notwithstanding the persistent dilatation of the pupil, for, as I shall show, this sign is not without qualification. In fact, we find that the reporter of the case remarks, "excepting the dilatation of the pupil, the patient's condition exactly resembled that of opium poisoning, after the delirium had subsided into coma."

LECTURE II.

OPIUM AND BELLADONNA, CONTINUED.

A review of the fatal cases of opium or belladonna poisoning, in which the antagonist was the principal means of treatment, lessens their importance as negative testimony. The maximum and minimum toxic doses proving fatal are equaled by the doses recovered from. Hence it may be assumed that, if the results are not fortunate in any case, we have a right to conclude that one of three propositions is true: that the toxic dose was excessive; that it had been acting so long that the tissues could no more react to the antagonist; or, that the antagonism was defeated by the failure of some vital organ. In the fifteen fatal cases, there were eleven inefficiently treated; in six of these but a single injection was practiced, and in all the actual amount required to antagonize the toxic agent was not given. In two of the fifteen cases the antagonist was used in excess, and the fatal result in both may fairly be attributable to this preponderating action. In six, the persons poisoned were already in a pathological state: one had experienced an apoplectic stroke; one died from cerebral hæmorrhage, and another from cerebral effusion; one was suffering from the effects of a cholera morbus; one had a fatty heart; and one had general adhesions of both pleural surfaces. If, indeed, all the sources of fallacy were excluded, the fatal cases would scarcely aspire to the dignity of negative facts. So preponderating are the examples of success, and of so little value the negative cases, that a high degree of certainty must be admitted to inhere in the application of the antagonism of opium and belladonna.

With respect to the successful cases, if it be claimed that one agent may prevent death from the other, it must be shown that the quantity of poison taken was really lethal. As readily determined as this may appear to be, it is nevertheless difficult, even impossible, in respect to any single instance. We find in Taylor "On Poisons" that four grains of crude opium, two drachms of laudanum, and one grain of muriate of morphia have each proved fatal to adults. On the other hand, as much as eight ounces of laudanum have been taken without injury. In one instance a drachm of the extract of belladonna did not, and, in another, two grains of atropia did, cause death. The remarkable variations in the toxic effects of poisons, due to idiosyncrasy, to the state of the stomach, to the fullness of the vascular system, to habit, etc., must be taken into account in estimating the influence of the antagonist in the curative result. Harley has collected a number of cases, in which an unquestionably lethal quantity of the poison failed to cause death, when not interfered with by the action of an antagonist, or by any specific treatment. It is necessary therefore to ascertain, definitely, whether in each one of the 106* successful cases the patient had received a dose probably lethal, or presented symptoms indicating that such quantity had been taken. On the other hand, the antagonism may be admitted to exist, if decided symptoms occasioned by one may be removed by the administration of the other. Under the latter, may be classified the cases of Graefe and Fronmüller, in which symptoms of poisoning were produced by a half grain of sulphate of atropia. The antagonizing action may be just as clearly exhibited in such as in undoubtedly lethal cases. Among the patients receiving the largest amount of poison and recovering, were one having had thirty grains of crude opium; one, an ounce and a half of laudanum; one, twelve to fifteen grains of morphia; one, five grains of morphia; one, six grains of morphia; one, a teaspoonful of belladonna liniment, which is of four times the strength of the extract; one, two grains of morphia and one grain of atropia together, etc. In all but two, the quantity of poison received was sufficient, *cœteris paribus*, to cause lethal effects, and this collection of cases, therefore, fulfills the conditions necessary to the determination of the question of antagonistic action in its entirety.

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* Another case obtained from "N. Y. Med. Jour." just before this lecture.

While the necessary conditions are not wanting in the examples of antagonistic action collected here, there is a source of fallacy in the fact that various approved expedients were resorted to, in addition to the exhibition of the antagonist. An emetic or the stomach-pump, faradism, ambulation, various kinds of irritation of the surface (chiefly flagellation), and artificial respiration were employed to a greater or less extent. Sometimes good effects were obtained by these measures, but the antagonism could not be questioned when the respiration, the cardiac movements, and the state of the pupil indicated the action of the antagonist. Very often the protracted efforts at resuscitation, in the way of flagellation, ambulation, artificial respiration, and faradization, exhaust the patient. In several of the cases it is evident that these ill-advised measures contributed to a fatal result, especially the protracted ambulation and flagellation. I quote on this point the fifth and last conclusion of Dr. Johnston, of Shanghai, China: "When the system is fairly under the influence of atropine, with respiration tranquil, however slow it may be, it is undesirable to interfere by artificial respiration, as it only embarrasses the breathing and interferes with the tranquil sleep which usually follows the exhibition of atropine."

All sources of fallacy eliminated, the antagonizing action of opium and belladonna is supported by a great array of cases. The clinical evidence seems conclusive. We have now to examine the evidence in opposition based on experiments on animals. This is deserving of attentive consideration. Unfortunately, the first observations made on animals by Brown-Séquard,* Bois,† Camus,‡ Onsum,§ and Harley,‖ were vitiated by their neglect to ascertain the exact lethal dose of opium or of belladonna. In 1866, Erlemeyer¶ published an experimental research, in which, for the first time on animals, the nature of the opposed action of morphia and atropia was ascertained. He demonstrated that these agents were opposed, or antagonistic, in respect to their influence over the pulse, respiration, pupil, and brain, and that they were much better borne when given in combination than when given separately. Conclusions in some respects the same were reached by Harley. He thus formulates the results of his experiments on dogs:

"1. Belladonna, when administered simultaneously with opium, more or less completely prevents nausea and vomiting, and, when given previously, entirely prevents these effects. 2. Whether given previously, simultaneously, or subsequently, atropia completely counteracts the respiratory restraint on the free action of the heart, which is so prominent an effect of the operation of opium. We can wish," he further says, "for no more perfect an illustration of the beneficial influence of a medicine under suitable conditions than that afforded by the simple and direct action of atropia in relieving the impending syncope which often persists for many hours after a dose of opium. . . . 3. While the spinal effects of opium on the muscles of organic life are thus counteracted by the stimulant action of atropia on the sympathetic, the cerebral and anæsthetic effects are intensified and prolonged by belladonna, and hypnosis is converted into narcosis," etc.

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* "Jour. de Physiol.," etc., *loc. cit.*

† "Gaz. des Hôp.," 71, 1865.

‡ "Gaz. Hebdom.," 2 sér., xii, 32, 1865.

§ "Schmidt's Jahrbücher," vol. cxxviii, p. 288.

‖ "The Old Vegetable Neurotics," *loc. cit.*

¶ "Berlin. klin. Woch.," 2, 1866.

In 1870, Dr. Koning* published a dissertation on the supposed antagonism of morphia and atropia, his research being conducted on animals. As had his predecessors in this inquiry, Koning decided adversely to the existence of this antagonism, although he noted the antagonizing influence of these agents on the pupil, the respiration, and the action of the heart. In 1873, Fröhlich,† of Würzburg, experimented with these agents on frogs and cats. His experiments rather indicated the existence of points of opposition, but not sufficient to prevent death from a lethal dose of both agents. In 1874‡ appeared the report of the committee appointed by the British Medical Association, Professor J. Hughes Bennett, M. D., of Edinburgh, Chairman. In making the report on this division of the subject—the antagonism of morphia and atropia—the reporter says: "Extraordinary pains were taken to determine the question whether or not morphia and atropia were antagonistic of one another; and the researches now to be described will be found to add largely to our precise and exact knowledge as compared with the unfounded and contradictory opinions which have hitherto prevailed. The conclusions at which they arrived, after experiments on the rabbit, chiefly, are as follows:

"1. Sulphate of atropia is physiologically antagonistic to the meconate of morphia within a limited area. 2. Meconate of morphia does not act beneficially after a large dose of sulphate of atropia, for in these cases the tendency to death is greater than if a large dose of either substance had been given alone. 3. Meconate of morphia is not specifically antagonistic to the action of sulphate of atropia on the vaso-inhibitory nerves of the heart; and, 4, the beneficial effect of sulphate of atropia after the administration of large doses of meconate of morphia is probably due to the action sulphate of atropia exercises on the blood-vessels. . . . It may also assist up to a certain point, not precisely fixed in these experiments, by stimulating the action of the heart through the sympathetic, and obviating the tendency to death from deficient respiration observed after large doses of morphia."

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* "Schmidt's Jahrbücher," vol. cxlix, p. 18.

† "Pharmakologische Untersuchungen," 1873, pp. 224 and 231.

‡ "Brit. Med. Jour.," 1874, vol. ii, various Nos.

In 1876 the same line of research was taken up by Corona, on dogs and cats. He arrived at the conclusion that a partial physiological antagonism existed between morphia and atropia; but not a therapeutical antagonism—for, while morphia is useful in atropia poisoning, in poisoning by morphia the effects are not removed by atropia. In this opinion Corona stands quite alone. In the following year, 1877, Dr. Hans Heubach reviewed the literature of the subject, and undertook a new investigation of the supposed antagonism, confining his experimental research to animals. These investigations, carried on at Binz's laboratory, at Bonn, support the view of a limited antagonism in the cardiac and respiratory organs.

The various experiments on animals have been singularly uniform in results, how much soever the interpretations put on the facts may differ. In the first place, it is perfectly evident that, when lethal doses of the two poisons are administered, fatal results almost invariably ensue—not invariably, since the Bennett committee succeeded in a very few out of a great many trials. If the experiment of Bois, already described, should always succeed, the lethal power of the two agents combined is greater than that of either alone. If the lethal effects be omitted from consideration, we find that the experiments on animals are of great value in interpreting the antagonism of these agents on man; for they serve to show, not only the nature of the antagonism, but the method of its production. These experiments demonstrate that morphia and atropia are antagonistic on the pupil, on the action of the heart, and on the movements of respiration.

We are now prepared to undertake to investigate the nature of the antagonism as it occurs in man. To proceed from the known to the supposed, we must first form a definite conception of the physiological action of each. What effect has morphia, what effect has atropia, on the organism of man? In what respects do they agree, in what respect do they differ in their action? The action of each must be studied in respect to full and lethal doses. When a full dose of opium is administered, drowsiness—in some subjects an obstinate wakefulness—comes on; the pupil contracts; the mouth, tongue, and throat become dry; the appetite is lost; constipation occurs in consequence of diminished secretion and lessened power in the muscular layer of the bowel; the action of the heart slows and declines in force; the respirations diminish in number and depth; the urine is passed slowly and with some difficulty, and is scanty; and the skin is covered with a copious perspiration. When a lethal or toxic dose is swallowed, all of these effects are intensified; the individual passes into a condition of stupor, which more or less quickly deepens into coma, from which no form of irritation can rouse him; the pupils contract to the size of a pin's point, and the conjunctivæ are insensible to irritation; no reflex movements are excited by touching the cornea or by titillating the fauces; the respiration is slow, descending to six, to four, even to two in a minute, and is stertorous and shallow; the pulse is slow, weak, and irregular, or very rapid, irregular, and weak; the skin is covered with an abundant cold sweat; the countenance is pale and sunken, sometimes blue with cyanosis or livid; the ears are purplish, and the neck, posteriorly, bluish-black from ecchymosis; and the extremities, as well as the skin generally, are cold and clammy. Death ensues by failure of respiration.

When a full dose of belladonna is taken, the mouth and lips quickly become dry, and swallowing is difficult; the head feels full, and there are vertigo, tinnitus aurium, and flying pains, frequently severe headache; the mind is excited, speech rapid and voluble, and there occur hallucinations—a busy delirium, in which the individual is engaged in his usual occupation—the tailor crosses his legs and goes through the motion of sewing; a carpenter appears to be driving the plane or handling the saw; others are boisterous and quarrelsome, and fall to fighting and struggling, etc.; the pupils are widely dilated; the action of the heart is rapid—the pulse, at first firm, afterward is weaker, and the arterial tension, at first raised, declines subsequently below normal; the respirations are quickened; the bowels are apt to be relaxed; the urine is voided slowly and with difficulty; the gait is unsteady from muscular incoördination, and the muscular system is weakened; the skin is dry and warm, the face is flushed, and often covered with a scarlet efflorescence, etc. When a lethal or toxic dose is taken, the symptoms just mentioned are increased in all directions; a sudden vertigo overpowers the voluntary movements, vision quickly grows dim and uncertain, with the extreme dilatation of the pupil; delirium follows quickly and is occupied with ordinary employments, with talking, visiting, sewing, or with angry controversy and struggling; but this stage of hallucinations, which, when non-lethal but large doses are taken, is protracted, is comparatively short, and is succeeded by coma, or there come on, in the midst of excited delirium, snatches of stupor, but presently the unconsciousness becomes profound; the pupils dilate until no rim of the iris is visible; the mouth is utterly devoid of moisture, and the tongue, shrunken and dry as a bone, lies in the bottom of the mouth motionless; the flush of the face is succeeded by a deathly pallor; the pulse becomes very rapid, and the respiration is hurried; the temperature of the body rises, but the increased tension of the arterial system is succeeded by paresis of the vessels, the pulse becoming weak and fluttering; and death results from the failure of the heart and lungs.

A comparison of the actions on man shows that opium and belladonna act oppositely, or in an opposite manner, *on the brain*, *on the pupil*, *on the circulation*, *on the lungs*, *on the stomach*, and *on the skin*. Opium, with the exceptions named, causes somnolence and stupor; belladonna, excitement, hallucinations, and delirium. When administered jointly and in the proper proportions, sopor, closely approximating natural sleep, is the result. This was well exhibited in the case of Dr. Legg,* whose patient, a boy of five years, drank by mistake a mixture of equal parts of liniment of opium and liniment of belladonna. The effects of the belladonna, owing to its more rapid action, first dominated the situation, when there was delirium with hallucinations, the boy driving sheep, and picking up money from the bed; but then drowsiness supervened, and heavy sleep, when he was not forced awake and kept walking. The violence of this ambulatory treatment was wholly unnecessary, and indeed injurious, for, if he had been permitted to sleep, the antagonism on the respiration and circulation would have sufficed to save life. Facts of the same kind were observed in a case jointly cared for by Dr. Mussey, of Cincinnati, and myself. A boy of eight years, the son of a physician of Cincinnati, was given internally by mistake an anodyne application for earache, containing two grains of morphia and one grain and a half of atropia. When the toxic symptoms were well advanced, the mistake was discovered, and Dr. Mussey and myself were summoned. We found the pupils fully dilated, the face flushed, and an active delirium, in which the boy fought and struggled violently against imaginary enemies. After an hour or two of this excitement, a soporose state came on, and was very profound for a number of hours. As, however, the respiration was full, strong, and rhythmical, the pulse regular and of good volume, we decided to await the result of the antagonism. Dr.

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* "Med. Times and Gaz.," Nov. 3, 1866, p. 474.

Mussey had published one of the first cases of opium poisoning illustrating the antagonistic action of belladonna, and I had seen several cases, so that we were perfectly agreed as to the proper course, and the result justified our decision. Another case, in which the simultaneous administration of opium and belladonna was due to accident, was reported by Dr. Cotter.* A young lady swallowed a liniment composed of opium and belladonna, the amount taken being equivalent to twenty-five grains of the extract of belladonna and twelve grains of opium. At first, the symptoms of belladonna poisoning were largely in excess; after some hours, she appeared like one helplessly drunk, and was so drowsy as to be kept awake with great difficulty; then another period of excitement came on, and this was followed by a period of profound sleep, from which she awoke relieved. Such are the facts as taught us by these accidental experiments on man. What is the clinical experience available for further study of the problem?

As a result of large observation and experience of the effects of these agents on man, Drs. Mitchell, Morehouse, and Keen conclude that "the headache and phantasms of atropia are certainly thus controlled [i. e., by morphia], as well as the partial deafness and visual defects which in high doses it occasions. On the other hand, when morphia has been fully used, the drowsiness and stupor which are the best tests of its power disappear before the influence of atropia. . . . Perhaps the most peculiar cerebral symptom of atropia is its tendency to cause phantasms and illusions. We found under doses of $\frac{1}{25}$ of a grain these were common, and in some men could always be brought on. Usually they were absent so long as the eyes remained open, but arose at once on closing them. This condition was singularly subdued by morphia. Drowsiness caused by morphia was as surely lessened or destroyed by the counter agency of atropia; and, in fact, atropia given alone and in full doses is very apt to cause a restless night to follow, so that it is assuredly in no sense a hypnotic."

Harley strongly insists on the modifying influence of morphia over the cerebral effects of atropia. "The influence of opium in converting the insomnia of belladonna into sleep, and the influence of belladonna in determining, not only sleep but narcotism in individuals under the influence of opium, are illustrated in several examples. Some of the cases," he further says, "serve to give greater force to these observations, and teach us that we must be careful how we employ opium as a means of converting the restlessness and insomnia following excessive doses of belladonna into quiet sleep." Harley, strangely enough, does not regard these different cerebral effects as due to an antagonistic action, but as synergistic. It is, nevertheless, evident enough that his observations are confirmatory of those of Mitchell, Morehouse, and Keen, who state with more precision the exact features of the reciprocal influence. In fact, at the present time professional opinion is no longer divided on this point, and morphia and atropia, and opium and belladonna, are constantly prescribed together to secure an hypnotic effect, not attainable by the exhibition of either remedy alone. Clinical experience on man has been confirmed by observations on animals, so far as the facts are applicable. Thus, Erlenmayer * shows that the exciting effect of atropia on the brain is lessened by the narcosis of morphia. Harley's experiments on dogs were similar in results: "The cerebral effects of atropia are," he says, "intensified and prolonged—the insomnia which results from excessive doses is converted into narcotism, or a mixture of narcotism and delirium." Heubach,† whose researches were carried on in Binz's laboratory, was led to similar conclusions. Obviously, the actions of such agents on the brains of animals can be compared only according to the extent of development, for, the brain of man being more complex in structure and more highly specialized, must be affected both with less severity and in a greater variety of manifestations. In animals the effect of the narcotic is necessarily limited to the cephalic organs possessed by them, whereas in man, not only to those, but to the higher special organs he is possessed of, is the influence distributed. In animals the narcotic more affects the motor centers and the centers of respiration and circulation, while in man its effects are exerted not only upon these centers, but upon the higher centers and upon the mental sphere. Do we not have in this difference in development the reason of the much greater toxic power in animals of morphia and atropia when administered simultaneously? Bernard ‡ has signalized this important point in his introduction to the study of experimental medicine. After declaring that observations on animals, in respect to the functions of the cerebro-spinal nerves, and the vaso-motors and secretors of the sympathetic, and on circulation and digestion, hygiene and toxicology, are perfectly and at all points applicable to man, he indicates conditions under which the observations on animals are not thus applicable. For

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* "Am. Jour. of the Med. Sci.," vol. l, p. 67, *et seq.*

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* "Berlin. klin. Woch.," *loc. cit.*

† "Arch. f. experiment. Pathol. u. Pharmakol.," 1878, Band viii, p. 31. "Antagonismus zwischen Morphin u. Atropin."

‡ "Introduction à l'Étude de la Médecine Expérimentelle." Paris, 1865, p. 219.

example: "From the physiological point of view, the experimental study of the organs of sense and of the cerebral functions must be made on man necessarily, because on the one hand man is above the animals in respect to those faculties of which they are not possessed, and, on the other, animals are unable to indicate the nature of those sensations of which they may become conscious."

My conclusion, after the examination of the experimental and clinical evidence, therefore, is, that, as respects the brain, opium and belladonna exert opposing actions. The illusions, hallucinations, and busy delirium caused by belladonna are counteracted by opium. The result of their conjoined action is sopor, deepening into coma when the quantity of both is large. When administered simultaneously, if the effects of atropia preponderate, there will occur periods of excitement and delirium, interspersed with relatively shorter periods of sopor and coma. The more decidedly opium preponderates, the less there will be of delirium, and the more of sopor. When opium is in excess, the tendency is to coma and stertorous breathing, after a period of sopor.

There are some highly important points in regard to the antagonistic action of morphia and atropia on the pupil. Graves, as is well known, first proposed to make use of this antagonism as a guide to treatment. There can be no doubt that this antagonism exists—that opium contracts and belladonna dilates the pupil; opium weakening and belladonna stimulating the radiating fibers of the iris. There are, however, occasional exceptions. As the state of the pupil is usually regarded as a guide to the use of the antagonist in cases of poisoning, it becomes in a high degree important to know if this indication can or can not be depended on, and to what extent. In Case XIV of the list of unsuccessful cases, we find that a very large quantity of morphia was given to counteract the effects of some belladonna liniment taken by accident, and that, notwithstanding the apparent preponderance in the action of the morphia, the pupil continued dilated. In one of the successful cases of joint administration of opium and belladonna, in which the symptoms produced by the latter much preponderated, the pupil was minutely contracted. It has been observed occasionally, in cases of opium poisoning, that at a certain stage in the narcosis the pupil dilated. On the other hand, in profound belladonna narcosis, the largely dilated pupil has suddenly contracted in some occasional cases. There are exceptional manifestations, it is true, but, as there are two examples in 120 cases, the value of the indication afforded by the state of the pupil is correspondingly weakened. The antagonism between morphia and atropia may be exerted without the contraction caused by the former, or the dilatation by the latter, being entirely overcome. No fewer than twenty cases illustrate this proposition. The rate at which these agents act on the pupil varies greatly. Atropia acts both more promptly and for a much longer time. Atropia has, also, a more powerful action—for, of the twenty cases which show that the size of the pupil may not be much affected by the antagonist, sixteen were examples of preponderating dilatation. From these facts, it must be concluded that the state of the pupil can not always serve as a guide for the further administration of the antagonist.

The next point for consideration is—the antagonistic influence of opium and belladonna on the heart. That opium, in full doses, acting alone, slows the heart, and that belladonna quickens it, are unquestionable facts. Observers are by no means agreed as to the influence reciprocally exerted by these agents when administered simultaneously. Mitchell, Morehouse, and Keen find that "morphia has no power to prevent atropia thus influencing the pulse, so that as regards the circulation they do not counteract one another." Harley maintains that morphia, here as elsewhere, increases the effect of atropia. "If, however," he says, "the dose of atropia is small, and the morphia produce considerable derangement of the vagus, the rapidity of pulse is not greater than when the atropia is administered alone. In my own observations I have invariably seen that the acceleration of pulse produced by atropia is lessened by morphia, and *vice versa*, and this is the conclusion derived from a study of the reported cases of poisoning. The effect of the atropia, however, preponderates. The result of the combined effect is not the mean of the two, but is nearer the standard of atropia than of morphia. As wakefulness and active delirium increase the pulse rate, and stupor with absolute repose lessens it, these factors must also be considered in estimating the relative share of opium and belladonna in the result. The experiments on animals have usually demonstrated an antagonistic action as regards the heart." Harley's experiments on dogs certainly show that the accelerating effect of atropia on the heart is remarkably lessened by combination with morphia. In the careful experiments of Heubach, the same result is shown; the increased pulsations caused by atropia are diminished by morphia, but the general level of effect is above the mean considerably. We must, therefore, conclude that the effects of morphia are antagonistic to those of atropia on the heart to a limited extent, but that the effects of atropia preponderate, and, hence, the result of the combined effects is a rate of movement greater than the mean.

Without doubt, the most important point in the whole range of the antagonism of morphia and atropia is the opposed action on the respiratory function. Less difference of opinion exists on this than on any other point connected with the subject. In general terms, it may be said that opium is a respiratory depressant, and atropia a respiratory stimulant. The cause of death in opium narcosis is failure of respiration, the action of the heart ceasing after respiration. Atropia counteracts this tendency, and maintains the activity of the respiratory function. All the cases of poisoning teach this lesson. As the opium narcosis deepens, the respiratory acts become less and less frequent and more and more shallow; the quantity of oxygen admitted to the blood lessens, and the oxidation processes decline; the surface becomes cold, and, carbonic acid accumulating, carbonic-acid narcosis is added to the toxic coma. Atropia counterbalances these effects by raising the number and increasing the depth of the respiratory acts, hence more oxygen is admitted to the blood, the chemical interchanges are more extensive and speedy, and excretion is facilitated. The improvement is represented by a flushed face, a warm and dry skin, and a more active circulation generally.

Atropia proves fatal by exhausting the irritability of the motor ganglia of the heart and of the general vaso-motor system, and also of the respiratory centers. Morphia, by lessening the work of the heart and of the lungs, opposes these effects of atropia. The facts presented in the 120 cases of poisoning generally support this view of the antagonism. In some of the cases, it is true, the narcosis was too profound to permit any new impression to be made; but, in those suitable for the action of the antagonist, nothing could be more striking than its favorable influence on the respiration. Dr. Johnston, of Shanghai, whose experience of opium poisoning has reached to hundreds of cases, says that the effect of the atropia is simply marvelous in stimulating the respiratory function and removing the carbonic-acid narcosis. In the fatal case of atropia poisoning narrated by Dr. Gross, the injection of morphia induced stertor. I have already suggested that the more gradual introduction of the morphia influence would have prevented this accident, which seems to have been an idiosyncrasy, rather. In a case narrated by Dr. Fothergill,* the influence of the antagonist on the respiratory function is most conspicuous. A woman had taken, at 11 A. M., laudanum containing from 12 to 17 grains of opium. At 2 P. M. the respiration was almost gone, but the pulse, though small, was rhythmical and regular. One grain of sulphate of atropia was then injected subcutaneously. In a half hour the respiration was becoming well established, and, in an hour and a half after the injection, was going on steadily, 13 to the minute, and long and deep. No further use of the antagonist was necessary to overcome the effects of the poison. It is probable, indeed, that the quantity of atropia used was rather in excess, as an emetic had caused the discharge of some opium, and the subsequent account shows a preponderating action of atropia. An equally instructive case, as showing the power of atropia to overcome the respiratory depression caused by morphia, is narrated by Dr. McGee.* A stout, muscular man of 40 years swallowed 30 grains of opium in 10 or 12 ounces of whisky. He became profoundly comatose. In two hours an eighth of a grain of atropia was injected, and, this having no effect, in a half an hour the same quantity was repeated. The respirations were then nearly suspended, the face being livid, but under the influence of the atropia the respirations increased greatly; the pulse rose to 140, the pupils became widely dilated, and consciousness was so far restored that the patient could be roused. He then slept profoundly for a number of hours, but his pulse continued at 81, with the respirations full and deep, and Dr. McGee, wisely trusting to the antagonistic action, did not exhaust his patient by ambulation, flagellation, artificial respiration, and other ingenious devices for keeping awake those who need the restorative effects of sleep and quiet. I might narrate many examples from the collection of cases made for this study, showing the importance of the antagonism exerted on the respiratory function. There is no difference in the lesson taught us in the cases of opium narcosis. The cases of atropia poisoning treated by morphia are not less instructive. Various examples come to us with the authority of such names as Graefe,† Schmidt,‡ Fronmüller,§ Cohn,‖ and others, occurring in ophthalmic practice. Some of these were probably not lethal, although characteristic and violent symptoms were produced; yet the antagonistic action of the morphia was not less conspicuously displayed.

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* "The Antagonism of Therapeutic Agents." Philadelphia: H. C. Lea, 1878, p. 132.

If we now pass from the clinical evidence to the results of experimental research on man and on animals, we are greatly surprised with the differences in the conclusions drawn. Mitchell, Morehouse, and Keen conclude that "the influence of atropia on the pulse and respiration is in no way altered by the use of full doses of morphia, so that in this particular their supposed antagonism does not exist." In some experiments of my own, made on a medical student, I found that morphia modified to a considerable extent the effects of atropia on the pulse and respiration—a fact clearly exhibited in the graphic representation of the results.* Harley expresses himself with decision against the supposed antagonism of these agents on the respiratory function, but he indicates conditions under which they may be used in opposition with advantage—a singular contradiction between his facts and his opinions. "Belladonna is powerless to obviate the chief danger in opium poisoning, viz., the depression in the respiratory function." But, in another place, he says, "in the treatment of belladonna poisoning, our efforts must be directed to sustain the breathing. Opium must be used, not as an antidote, but as a means of calming the nervous agitation when it is excessive," etc. It is impossible to find any meaning in such explanations. Again, he says, "when the heart shows indications of failing power, the subcutaneous injection of $\frac{1}{96}$ grain of sulphate of atropia, at intervals of two hours, must be practiced." The facts of Dr. Harley admit of very different interpretations from those which he has advanced; they prove that atropia exerts a distinct stimulant action on the respiratory organs, and are in conformity with clinical experience. We may now regard it as settled that atropia antagonizes the depression caused by morphia on the respiratory function, notwithstanding the adverse opinions just quoted.

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* "Am. Jour. of the Med. Sci.," July, 1869, p. 282.

† "Schmidt's Jahrbücher," vol. cxxv, p. 350.

‡ *Ibid.*, vol. cxxiv, p. 167.

§ *Ibid.*, vol. cxxvi, p. 282.

‖ "Berlin. klin. Woch.," 11, 16, 1865.

The antagonistic action of atropia and morphia is further exhibited in the control of the former over the nausea, depression, and actual syncope caused by the latter. This antagonism is exhibited in ordinary medicinal doses, and clinical experience justifies the remark of Harley, that morphia should not be administered alone, unless its action on the subject is known, but always with atropia. The explanation of the utility of atropia in preventing the nausea and depression caused by morphia consists in the counterbalancing action of these agents on the cerebrum. While the depression—ofttimes the syncope—is thus prevented, the nausea may occur, for atropia, also, excites nausea in some subjects. The coldness of the surface and the clammy sweat caused by morphia are removed by atropia. The importance of this fact is considerable. The first effect of morphia is to raise the arterial tension and to energize the cardiac movements, but this is followed by decline in the tension and by slowing of the movements. The peripheral vessels become relaxed, and the blood current becomes slow; the sweat glands act freely, and the functional interchanges between the blood and tissues are suspended. The action of atropia brings about an important change; the peripheral vessels contracting in their vermicular manner, and more blood being received from the heart, the surface grows warm and dry, and the function of metamorphosis of tissue is resumed. The effect of this resumption of activity at the periphery, on the condition of the cerebrum, is only less important than the renewal of hæmatosis at the lungs.

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* "Manual of Hypodermic Medication," 3d ed., Philadelphia, 1879.

Atropia stimulates the action of the kidneys somewhat, and morphia checks the flow of urine. They both act to render the emission of urine more difficult, but it is an error to suppose that they act in the same way. Morphia dulls the sensibility of the mucous membrane, and diminishes the contractile energy of the muscular coat of the bladder; atropia stimulates the sphincter to more energetic contraction, so that the voluntary efforts at relaxation are opposed.

Having now indicated the points of antagonism, and examined into the opinions for and against the belief in its existence, we are prepared to ascertain how a lethal dose of the one can overcome the effects of a corresponding dose of the other agent. It is evident that very rarely is a lethal dose of one agent counterbalanced by the other in animals. The reason apparently is the difference in the extent and variety of the cerebral structures in man, as compared with the inferior animals. The physiological actions are the same in animals as in man, except the difference in degree, to employ the words of the illustrious Bernard, but, when we reach the brain, we find that in animals the force of the poison is expended on a few comparatively simple organs, whereas in man it is diffused over much more extensive and complicated structures.

Experience has demonstrated that the quantity of poison which can be antagonized successfully, and a fatal result averted, is comparatively limited. Very considerable quantities, as we have seen, were taken in some of the successful cases, but they did not exceed a certain limit, and the stomach-pump and emetics were freely used, so that the actual amount entering the blood was far less than that taken into the stomach. What disposition of the poison is effected? There is no chemical union of the antagonist, to destroy the toxic power. It is simply opposed until elimination is accomplished. The tendency to destroy life by overwhelming the functions of particular organs is opposed and held in check, and gradually the poison is eliminated. Furthermore, the separation of the poison from the blood and its excretion by the usual channels are greatly promoted by the action of the antagonist in maintaining the functional activity of the organs depressed by the poison. . The rate of elimination and the means of promoting it become, therefore, important elements in the management of these cases, and, I may also add, are usually wholly neglected. The principal route of excretion is by the kidney, but the skin and intestinal canal, also, convey off some of the poison. In a few minutes after the alkaloids are swallowed, traces of them are discoverable in the urine. Free action of the kidneys should therefore be maintained by the use of diluents. Another practical point of high importance is, the removal of the urine as fast as it accumulates in the bladder. Brown-Séquard has shown that absorption of alkaloids takes place from the mucous membrane of the bladder, and he proposes to make use of this fact by injecting morphia solutions into this viscus. It is probable that alkaloids contained in the urine may diffuse into the blood again from the bladder. The action of the bowels should be free, and the skin should be stimulated—in fact, all the channels of excretion should be kept freely at work.

No absolute rule can be laid down as to the quantity of the antagonist to be used. Taking morphia poisoning as the type, the quantity of atropia must be determined by the effects. What are the guides? The pupils? No. For, although they may react in the usual way to the antagonist, it must be remembered that the action of atropia preponderates, and in some instances they do not react normally. The true guides are the state of the respiration and that of the circulation. If the breathing is deep and rhythmical, and the pulse is full and strong, the state of the pupil and the depth of the narcotism are of little moment. When the amount of the antagonist administered suffices to establish the respiration and circulation in their proper condition, the quantity is sufficient, whether or not it may be theoretically. As a rule, it is better to give the antagonist in small quantity, frequently repeated, until the amount required has been given. Large doses, as is evident in some of the cases, produce unpleasant effects, and may be in excess of the real requirements. In some actual trials, I found that $\frac{1}{20}$ grain of atropia was about equal in toxic power to a grain of morphia. In deciding on the dose of the antagonist, the amount of the poison probably eliminated must be taken into consideration.

Having completed the survey of opium and belladonna, I submit the following conclusions:

Morphia and atropia are antagonistic in their effects on the cerebrum, and the result of the antagonism is to induce sopor, but this deepens into coma if the quantity used is large, and hence the opposition does not extend to lethal quantities.

They are antagonistic in their action on the pupil, but this effect is not constant, owing to idiosyncrasy, and the action of atropia preponderates and is more lasting.

They are antagonistic in their action on the heart, morphia slowing and atropia increasing the rate of movement, but the effect of atropia is both more powerful and more prolonged.

They are antagonistic in their action on respiration, morphia slowing and atropia increasing the respiratory movements. Accordingly, morphia diminishes the excretion of carbonic acid, and causes carbonic-acid narcosis; atropia promotes the excretion of carbonic acid, and thus helps the function of hæmatosis.

They are antagonistic in their action on the arterial tension. Morphia, after first raising, greatly depresses the arterial tension, and suspends hæmatosis by slowing the heart and paralyzing the arterioles. Atropia antagonizes all of these actions.

Atropia prevents to a large extent, in many cases entirely, the depression, coldness of the surface, cold sweating, and cerebral nausea caused by morphia.

Morphia and atropia are antagonistic in their action on the kidneys, the former diminishing, the latter augmenting, the urinary discharge. They differ in their action on the bladder, morphia lowering the sensibility of the mucous membrane and weakening the muscular layer, while atropia stimulates the sphincter. They are not therefore antagonistic in their effect on the bladder.

In therapeutics, these antagonisms are made use of to procure effects not attainable by either drug singly; to avoid unpleasant results produced by each, and to enhance the safety of their administration in full doses. The whole subject affords a beautiful example of the success of the methods employed by modern pharmacological research to improve our knowledge of the action of the oldest remedies, and to increase the safety, certainty, and range of their applications to the treatment of disease.

LECTURE III.

ANTAGONISM OF ATROPIA AND PHYSOSTIGMA; ATROPIA AND PILOCARPIN; ATROPIA AND MUSCARIA; ATROPIA AND QUINIA; ATROPIA AND BROMAL HYDRATE; AND ATROPIA AND ACONITINE.

THE next investigation of the antagonism between medicinal agents is concerned with the opposition of actions between atropia and physostigma, or Calabar bean. The extract and the active principle—eserine, or, as it is sometimes called, physostigmine, or calabarine—are the preparations used to procure the physiological effects of physostigma.

For the first time, in 1864, Kleinwächter treated a case of poisoning by atropia by the internal administration of physostigma, the symptoms being relieved to a great extent. In 1867 Bourneville, in a thesis on the treatment of tetanus by physostigma, related a single experiment in which the effects produced by a quantity of the powdered kernel, introduced into the stomach of a cabiai, were overcome by the subcutaneous injection of atropia. In 1868 I made a number of experiments proving the existence of the antagonism. The most important research was that of Professor Thomas R. Fraser, of Edinburgh, in 1869, who performed a great variety of experiments, and introduced new principles for the guidance of future researches of the same kind.* This investigation was followed by the report of the Committee of the British Medical Association, Dr. J. Hughes Bennett, Chairman.†

Before proceeding to the analysis of the published facts and experiments, we must have a definite conception of the actions of the two agents. In what respect do atropia and physostigma differ? I have already described the deliriant effect of atropia, its power to dilate the pupil, to stimulate the heart and the respiration, to arrest secretion, to flush and at the same time dry the skin. Physostigma does not affect the cerebral functions; it contracts the pupil, paralyzes the voluntary muscles, but does not impair sensibility, increases secretion, energizes the heartbeats and raises the arterial tension, and causes death by paralysis of the respiratory muscles. Placed in opposition, we find that the points of difference are: on the brain, atropia causing delirious excitement, with hallucinations and illusions—physostigma not affecting this organ at all; on the pupil, atropia causing dilatation by stimulating the radiating fibers innervated by the sympathetic—physostigma causing contraction by paralyzing the radiating fibers, thus leaving the third nerve unopposed; on the respiration, atropia stimulating the respiratory center—physostigma paralyzing the muscles of respiration; on the heart, atropia increasing the rate of movement without adding to the power—physostigma increasing the power without hastening the movements of the heart; on secretion, atropia drying the mouth and the secretions of the intestinal tube—physostigma increasing the salivary flow and the secretions of the whole intestinal canal; on the voluntary muscular system, atropia causing paralysis of the motor nerves—physostigma producing spinal paralysis. As regards the lethal effects, the tendency to death by paralysis of the respiratory muscles, produced by physostigma, is overcome by atropia. Or, as it is expressed by Professor Fraser, "atropia prevents the fatal effect of a lethal dose of physostigma by so influencing the functions of certain structures as to prevent such modifications from being produced in them by physostigma as would result in death. The one substance counteracts the action of the other, and the result is a physiological antagonism so remarkable and decided that the fatal effects, even of three and a half times the minimum lethal dose of physostigma, may be prevented by atropia."

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* "On the Antagonism between the Actions of Physostigma and Atropia." From the "Trans. of the Roy. Soc. of Edinburgh," vol. xxvi.

† "Brit. Med. Jour." for 1874.

The first reported example of atropia poisoning treated by physostigma proved a success. The first experiment made with the definite purpose of ascertaining whether an antagonism existed, also, apparently proved the point. But the first sustained and sufficiently extended experiments made to test the antagonism were those undertaken by myself in 1868, before the published observation of Bourneville. While acknowledging the superiority in every way of the research undertaken by Fraser, I respectfully submit that my investigations, as published in my prize essay * of the American Medical Association, clearly preceded his by a year. Claims of priority are, however, ungracious, and I do not therefore urge mine. In his historical review, Professor Fraser has not sufficiently, I think, put my claim on its proper basis. Quoting from my essay, he takes a sentence or two from the general conclusions, which do not adequately convey the whole meaning of my researches. Thus, he says: "Dr. Bartholow deduces a number of general conclusions regarding the mutual counteraction of the two substances on several of the structures and functions modified by them. The following quotation contains an epitome of his views: 'Atropia is not a physiological antagonist to physostigma, except in regard to their action on the organic nervous system. It would be improper, then, to use atropia against poisoning by Calabar bean.'" As I shall presently show, my conclusions have been confirmed by subsequent investigations—the antagonism existing in the actions on the nervous system of organic life, as I had demonstrated. After the detail of some typical cases, out of a large number of similar experiments, I came to the following conclusions:

"Atropia and physostigma are antagonistic as to their influence

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* "Trans. of the Am. Med. Assoc." for 1869.

over the respiratory movements—atropia increasing and physostigma retarding them.

"They are antagonistic in their action on the heart—atropia producing excitation of the cardiac ganglia, and physostigma paralyzing them.

"They are opposed in respect to their action on the sympathetic —atropia causing increased action, and physostigma paralyzing this system.

"They have opposite effects on the pupil in virtue of opposite effects on the sympathetic—atropia dilating the pupil by its action on the radiating fibers of the iris, and physostigma contracting the pupil by paralyzing the radiating fibers."

My conclusions of 1868 have not been invalidated by the subsequent investigations, and hence the experimental data must have been accurate. I therefore venture to submit that Professor Fraser's quotation from my essay does not adequately represent my opinions. Apparently without investigating on his own account, and accepting a very restricted excerpt from my paper, Dr. H. C. Wood * says: "In 1869, Professor Roberts Bartholow, of Cincinnati, on the strength of a few really indecisive experiments, arrived at a conclusion opposite to that of Bourneville." Dr. Wood has absolutely no warrant for this positive assertion. So far from coming to a conclusion opposed to that of Bourneville, it was to the same purport, and based on a number of really decisive experiments. I have dwelt on my own views longer probably than they deserve, but historical accuracy is of some moment, and no man wishes his proper opinions mangled and distorted by others.

The quotation I have made from Fraser's paper indicates his belief in the existence of an antagonism in the lethal effects of atropia and physostigma of wide range, and his experiments, which were very numerous and carefully made, certainly support his opinion. The Committee of the British Medical Association hold this antagonism in less favor; although they admit its existence, they find it is more limited in range than Dr. Fraser had supposed. Their general conclusion is: "sulphate of atropia antagonizes to a certain extent the fatal action of Calabar bean," yet they maintain that, "for all practical purposes, atropia as an antidote to Calabar bean is useless, and not to be compared with the effects of chloral hydrate." In the first part of this strong statement, the Committee confirm the conclusion to which I had come, several years before, in respect to the use of atropia as an antagonist to the toxic effects of physostigma.

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* "Therapeutics, Materia Medica, and Toxicology," 3d ed., p. 320.

The special points of antagonism have been elaborately studied by various observers. As respects the heart, atropia first causes a rise of the blood pressure, but this is followed by the opposite condition, or diminution of blood pressure, while the action of the heart continues accelerated. Physostigma slows the movement by lengthening the diastolic pause, and increases the vigor of the contraction, and also raises the arterial tension. By Arnstein and Sustschinsky,[*] the excitability of the cardiac branches of the vagi was found to be increased by physostigma, and lessened by atropia. The experiments of Rossbach and Fröhlich, in all respects remarkable and novel,[†] seem not to confirm these observations. Köhler [‡] and Harnack and Wilkowski [§] found that physostigma lessened the pulse rate, after the peripheral filaments of the vagi were completely paralyzed by atropia. Harnack,[‖] in a polemical paper strongly characterized by the *fortiter in re*, controverts the views put forth by Rossbach and Fröhlich, and by Rossbach alone, in respect to the action of atropia on the heart and on the pupil. Köhler holds that physostigma slows the heart by paralyzing the accelerator nerve. It had already been shown that atropia stimulated the accelerator nerves (Bazold and Bloebaum). Tachau [¶] and Roeber [**] maintain that the retardation of the heart is due to a paralyzing action of physostigma on the cardiac ganglia, but Laschkewich [††] shows that this retardation is due to stimulation of the inhibitory apparatus. The rise of arterial tension produced by physostigma is probably due to contraction of the constrictor fibers of the arterioles, since strong local contractions of the intestine are produced by this agent when it is thrown into an artery supplying a small part of the bowel (Bauer [‡‡]). How much soever the explanations differ, the fact remains that atropia and physostigma act in an opposed manner on the heart. As respects the respiration, there are fewer differences of opinion. That physostigma causes death by paralysis of respiration, the heart continuing in action after respiration has ceased, seems abundantly established.[§§] On the other hand, it is generally conceded that atropia stimulates the respiratory function. Physostigma suspends, ultimately, reflex excitability, and is a spinal paralyzer; hence the function of respiration is only affected

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[*] "Centralbl. f. d. med. Wiss.," No. 40, 1867.

[†] "Pharmacol. Untersuchungen," Würzburg, 1873, p. 77.

[‡] "Archiv. f. exper. Pathol. u. Pharmacol.," i, p. 277.

[§] *Ibid.*, v, p. 402.

[‖] *Ibid.*, iv, 1875, p. 146.

[¶] "Archiv. d. Heilkunde," vi, 69.

[**] Hermann's "Lehrbuch der experiment. Toxicologie," p. 339.

[††] "Beobachtungen über die physiol. Wirkungen der Calabarbohne," Virchow's "Archiv," xxxv, p. 291.

[‡‡] Hermann, *op. cit.*

[§§] Hermann, *op. cit.*, p. 341.

(Laschkewich, Tachau). On the other hand, the respiratory center is stimulated by atropia, and acceleration of breathing takes place when the vagi have been divided (Bezold and Bloebaum). It is, therefore, clear that these agents are opposed in their actions on the function of respiration.

The point of opposition most conspicuous, and that which first suggested the existence of the antagonism, is the effect on the pupil —eserine causing contraction, and atropia, dilatation, of the pupil. Marked differences of opinion exist as to the mechanism of the antagonism. By some, the contraction of the pupil caused by eserine is referred to a paralyzing action on the dilator fibers (Fraser, Hirschmann *), and by others to a spasm of the sphincter fibers (Grünhagen and Rogow, † Bezold, and Goetz). That the latter view is correct seems supported by the fact that the effect of physostigma on the muscular layer of the intestine is to induce tetanic contraction or spasm. Further, when the pupil is contracted by eserine the contraction is readily overcome by atropia, but the atropinized pupil resists the action of eserine.

The delirium, hallucinations, and illusions caused by atropia are in no respect affected by physostigma. In all of the instances of poisoning by Calabar bean reported, the mind remained unaffected until near the end, when, carbonic-acid poisoning coming on, stupor and drowsiness supervened. All respiratory poisons, pure and simple, are accompanied at the close of life by the carbonic narcosis due merely to the suspension of hæmatosis. Carbonic-acid narcosis is an important element in the morbid complexus of atropia poisoning. These agents do not, therefore, have an antagonistic action on the cerebrum.

In the spinal effects of atropia and physostigma there are obvious differences. They are both paralyzers, but atropia causes, in cold-blooded animals, a subsequent tetanic condition. When atropia and physostigma are administered simultaneously, this tetanic condition occurs at once—a fact which I was the first to demonstrate; and, so exalted is the reflex function of the spinal cord, that a slight tap on the surface of the body causes a tetanic spasm, the condition in the intervals being that of relaxation. In several of the cases of atropia poisoning, trismus was a marked symptom. Atropia affects the spinal cord, Ringer and Murrell have shown; ‡ and the paralysis induced by it, they maintain, is largely spinal, although it does impair the irritability of the motor-nerve trunks. According to the

* "Archiv. f. Anat. u. Physiol.," 1863, p. 309.

† "Centralbl. f. d. med. Wissensch.," 1863, p. 577.

‡ "Jour. of Anat. and Physiol.," xi, part 11.

experiments of Dr. Mary Putnam Jacobi, the sensibility of the sensory nerves is impaired by atropia. Physostigma, on the other hand, increases the irritability of the sensory nerves, and is a spinal paralyzer, leaving the motor nerves and the muscles intact. These agents, therefore, agree on more points than they differ in their action on the spinal cord.

As respects the function of secretion, there is an obvious difference in action between physostigma and atropia. An increased flow of saliva, of the intestinal juices, of the tears, and of the sweat, is a constant result of the action of physostigma, and is due, according to Heidenhain,* to a central excitation of the secretory nerves. This conclusion seems established by the fact that the increased secretion of saliva failed to occur when the chorda tympani was divided near the submaxillary gland. The action of atropia is the opposite of this—it suspends secretion, most probably by paralyzing the end organs of the nerves in the gland, for, as Schiff has shown, arrest of the secretion of the submaxillary gland follows division of the chorda tympani. Increased outpouring of saliva takes place when the divided extremity of the nerve is galvanized; whence it may be concluded that physostigma stimulates the secretory centers.

On the motor functions, and on the muscles, atropia and physostigma act differently. I have already emphasized the tetanizing action of atropia on cold-blooded animals, and the trismus which occurs in so many cases of poisoning. Botkin † was the first to show that atropia paralyzed the motor-nerve trunks, and Laschkewich ‡ and Fraser proved that, in poisoning by Calabar bean, the irritability of the motor nerves and the contractility of the muscles were unaffected. The action on the motor functions is therefore different, and not opposed.

In summing up the results of the various researches, it may be regarded as established: 1. That physostigma, or eserine, and atropia are antagonistic in their effects on the pupil. 2. That they act differently, but probably not antagonistically, on the heart, unless we accept the views of Köhler and Bezold and Bloebaum—the former maintaining that physostigma paralyzes the accelerator nerves of the heart, and the latter that atropia stimulates these nerves. 3. That they are opposed in their action on respiration, physostigma paralyzing, and atropia stimulating, the respiratory function. 4. That they are not opposed in their action on the cerebrum, atropia producing delirium, and physostigma having no effect on the cerebral functions, while both cause more or less carbonic-acid narcosis. 5. That they act differently and not in an opposed manner on the spinal cord and nerves, both producing paralysis, but atropia does, and physostigma does not, impair the irritability of motor nerves. As regards the sensory nerves, physostigma augments their irritability, while atropia seems rather to lessen it, if any effect is produced. 6. That they act oppositely on secretion, physostigma stimulating and atropia arresting the secretions in general.

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* "Arch. f. d. ges. Physiol.," v, p. 40: quoted by Hermann.

† Virchow's "Archiv," xxiv, p. 85.

‡ *Ibid.*, *loc. cit.*

It follows from these conclusions that the lethal effects of physostigma, due to paralysis of respiration, are overcome by atropia by sustaining the respiratory function. The Committee of the British Medical Association assert that "the antagonism exists within very narrow limits," but this happens to be sufficient to avert death, when doses little more than lethal have been administered; still, the use of physostigma against the lethal effects of atropia is of doubtful propriety. The paralyzing effect of physostigma on respiration may, doubtless, be successfully overcome by the suitable application of atropia.

BELLADONNA AND PILOCARPUS.

The antagonism of action between belladonna and pilocarpus, or atropia and pilocarpin, is one of the most interesting, as it is one of the most exact, in the whole series of antagonisms of medicinal agents. The functional disturbance produced by atropia has been sufficiently elaborated in the preceding sections. Our task is now chiefly concerned with the peculiar powers and attributes of pilocarpin. The history of jaborandi affords us a capital illustration of the benefit of physiological research as applied to the study of remedies. When it was first introduced, a great many observers in all parts of the world set about the study of its actions. In an almost incredibly short time we were put in possession of its actions, and the range of its uses was at once indicated. All has been abundantly confirmed by trials on man, and the first conclusions arrived at have only been supported by subsequent investigations. The literature of pilocarpus is already vast. I will call your attention only to the subject of its antagonistic action. We must first form a definite conception of what pilocarpin does.

In a few minutes after the alkaloid pilocarpin has been injected subcutaneously, or taken into the stomach, the action of the heart increases, the face flushes, and a subjective sense of heat is felt throughout the body, but especially about the face. The increased action of the heart does not take place when very large doses are administered, and the increase from small doses is not maintained after the characteristic sweating. The pupil contracts, spasm of the accommodation occurs, and recession of the near point takes place. More or less headache is experienced, and there are present a feeling of frontal tension and transient vertigo. Soon after the flushing of the face and the subjective sense of heat are experienced, perspiration begins, first on the forehead usually, and then over the whole body, and presently the sweating is enormous, the skin literally pouring out water. Simultaneously with, or often before, the sweating, the salivary glands become active, and presently mouthful after mouthful of saliva is discharged, so that the quantity may be measured by ounces, even pints. In some instances the one secretion seems to be substituted for the other. Thus, when the salivary flow is great, the sweat is less, and *vice versa*, but the usual experience is that both secretions are enormously increased. With the full development of the salivary and sudoral discharge, the pulse declines in force, in volume, and in the number of beats, the face becomes pale, the strength diminishes, and a feeling of exhaustion is experienced. The temperature, which was slightly or not at all increased during the stage of excitement, descends somewhat below normal after the sweating. The secretion of urine is rather less than normal, but the bladder is irritable and the desire to micturate is frequent. The surface of the body is cool and a sense of chilliness is experienced. Drowsiness comes on, as a result of the exhaustion, and is not a direct effect of the remedy on the brain. When the preparations of pilocarpus are taken into the stomach, and, to a much less extent, when the active principle is thrown in under the skin, more or less nausea, even vomiting, is produced, and not unfrequently a watery diarrhœa.

The opposition of actions, between an agent causing such functional disturbances as I have just described and atropia, is apparent at a glance. Let me briefly indicate the main points as a preliminary to the study of the mechanism of the antagonism. The first increase in the cardiac movements caused by pilocarpin is of very short duration and is followed by feebleness of the heart and diminished arterial tension; atropia induces and maintains a quickened heartbeat and a high arterial tension, during at least the whole duration of the action of pilocarpin. A subjective sensation of heat and flushing of the face is caused by both, but is very transient in the case of pilocarpin. Contraction of the pupil is produced by pilocarpin, dilatation by atropine. Dryness of the mouth and of the skin results from atropia, profuse secretion from pilocarpin. Both of these agents tend to cause nausea and vomiting, and a watery diarrhœa. Both render the bladder more or less irritable, and atropia increases the urinary secretion a little, while pilocarpin diminishes it. As regards the nervous system of animal life, no antagonism exists. Pilocarpin does not affect the cerebral functions directly, while atropia causes delirium. Pilocarpin induces weakness of the muscular system, but atropia brings on a tetanic condition by stimulation of the cord, and paralysis by an action both on the cord and on the peripheral motor nerves. In all those actions involving the functions of the organic nervous system there is very complete antagonism, but in respect to the nervous system of animal life no antagonism is possible.

The only examples of application of the antagonism to the treatment of poisoning, which I have been able to find, are two cases of poisoning by belladonna liniment, received into University College Hospital in charge of Dr. Sydney Ringer.* Pilocarpin was injected subcutaneously in both, without any obvious influence over either. The experience in the more important of the two cases demonstrated that one grain and a third of pilocarpin failed to excite perspiration, when one third of a grain of the same sample caused in healthy persons most profuse sweating. It is obvious that belladonna is relatively more intense, as it is more prolonged, in its effects.

The first experiments to determine the antagonism of atropia and pilocarpin were those of Vulpian,† and were confined to the salivary and sweat secretions. When the saliva and sweat are pouring out in a stream from the action of pilocarpin, the flow of secretion is almost instantly arrested by the administration of atropia. The mechanism of this antagonism has been thoroughly investigated by Vulpian,‡ Langley,§ Marmé,‖ Petrina,¶ and numerous other investigators. Pilocarpin stimulates the nerve ends in the glands, and, as Heidenhain long ago proved, atropia paralyzes the end organs of these nerves. The chorda tympani and the sympathetic filaments distributed to the submaxillary gland being divided, pilocarpin still has power to cause increased secretion, as Langley has shown, thus proving that this agent also stimulates the gland cells. In this respect, also, it is probable that atropia has an antagonistic action. The experiments of Langley on this point have been confirmed by Nawrocki,** Fuchsinger,†† and the other observers just named.

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[*] "Lancet," Mar. 4, 1876.

[†] "Gaz. Hebdom.," 1875, 6, p. 81.

[‡] *Loc. cit.*

[§] "Jour. of Anat. and Physiol.," xi, part 1, pp. 173, *et seq.*

[‖] Virchow u. Hirsch, "Jahresbericht," 1878, p. 173.

[¶] "Deutsch. Arch. f. klin. Med.," xxi, p. 258.

[**] "Centralbl. f. d. med. Wissensch.," vi, p. 97.

[††] Pflüger's "Archiv," xv, p. 483.

The increase of secretion caused by pilocarpin is not limited to the skin and salivary glands, but extends to the mucous membrane of the nose, bronchi, and intestinal canal, although to a less extent. The arrest of these secretions by atropia is not less prompt and decided. The increased secretion caused by the subcutaneous injection of one fourth of a grain of pilocarpin muriate, or sulphate, is arrested by $\frac{1}{100}$ grain of atropia. In a personal trial of this quantity of pilocarpin, I found that the salivary flow began in three minutes, and in five minutes I was drenched by perspiration, the flush of the face and sense of warmth had ceased, the surface felt cold, and a sense of extreme bodily depression came on. A marvelous change was wrought by the subcutaneous injection of $\frac{1}{100}$ grain of atropia. In three minutes the sense of depression began to decline, in five minutes the surface grew warm again, and the flow of sweat and saliva ceased, so that by the end of ten minutes the disturbances caused by each had disappeared, and I was in the same condition as if neither had been taken.

The first effect of pilocarpin on the heart is to increase its action. This is coincident with flushing of the face. Belladonna, after a very brief preliminary slowing, greatly increases the action of the heart, and also flushes the face. The increased action due to pilocarpin is brief, and is followed by slowing and feebleness of movement. The resemblance in action is only apparent. The increased movement produced by atropia may be explained, as we have seen, in either of two modes—by paralysis of inhibition, or by stimulation of the accelerator fibers. The increased action due to pilocarpin is a result of the dilatation of the arterioles. It is just here that the antagonism exists. The manometric observations of Kahler and Soyka,* the experiments of Langley, Hardenhewer,† and Robin,‡ alike demonstrate that pilocarpin lowers the vascular tension by a paralyzing action, causing dilatation of the arterioles. The sudden withdrawal of the blood to the peripheral vessels necessarily causes increased action of the heart. Belladonna exactly antagonizes these effects: it raises the arterial tension by inducing contraction of the arterioles. The depression in the heart's action, and irregularity of rhythm, due to the action of pilocarpin on the motor apparatus, and which succeed to the preliminary increased movement, are antagonized by atropia (Service).§

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* "Kymographische Versuche über Jaborandi," "Arch. f. exper. Pathol. u. Pharmacol.," vii, p. 435.

† "Berlin. klin. Woch.," No. 10, 1877.

‡ "Étude Physiologique et Thérapeutique sur la Jaborandi," "Jour. de Thérap.," various numbers for 1875.

§ "Jour. of Anat. and Physiol.," April, 1879

The temperature variations observed by all who have carefully investigated this point are explained by the circulatory disturbance. According to Robin, just before sweating begins, and when it is going on actively, the temperature rises, but this does not appear to be a constant result. When the sweating has reached its maximum the temperature begins to fall, the decline reaching from 0·5° to 2° F., and this reduction of body heat persists for several hours—it may be for twenty-four hours (Robin, Curschmann,* Weber,† Ringer and Gould,‡ *et al.*). The decline of temperature caused by pilocarpin is antagonized and prevented by atropia. By raising the vascular tonus, and arresting or preventing the profuse discharge of saliva and sweat, atropia restores the normal equilibrium, and consequently the fall of temperature is prevented.

Extending our investigation now to the eye, we find that the most exact opposition of actions exists in the effects of pilocarpin and atropine on this organ. Myosis, spasm of accommodation, and recession of the near point are produced by pilocarpin; and the exactly opposite effects—dilatation of the pupil, paralysis of the accommodation, and removal of the distant point—are produced by belladonna (Königshofer, Tweedy,§ Galezowski,‖ *et al.*).

That pilocarpin directly affects the brain is doubtful. It is true, headache, vertigo, tinnitus aurium, etc., have been observed from considerable doses; and drowsiness, even sleep, accompanies the state of languor and depression caused by the profuse salivary and sudoral discharge and the lowered vascular tonus. These secondary results of the action of pilocarpin are not antagonistic to the delirium, hallucinations, and illusions of atropia. In the cases narrated by Dr. Ringer the delirious excitement of belladonna poisoning was not modified by the action of pilocarpin—so that, viewed from either the theoretical or the practical standpoint, the existence of an antagonism on the brain must be denied.

The nausea and vomiting caused by pilocarpin are probably not affected, or are increased, by atropia. When the action of the drug ceases, the stomachal distress occasioned by it ceases also—hence, in this indirect mode, atropia may prevent or arrest it.

I have already indicated some points of similarity of action between pilocarpin and atropia—the quickened heart and flushed face—but these, as has been shown, are apparent and not real. They both agree, however, in the insusceptibility of children to their action. The observations of Ringer and Gould are very precise in regard to this insusceptibility of children to the action of jaborandi. They found that the quantity which sufficed to produce profuse sweating in adults affected children very slightly or not at all. Children are equally insusceptible to the effects of belladonna.

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* "Berlin. klin. Woch.," June 18, 1877.

† "Centralbl. f. d. med. Wissensch.," No. 44, 1877.

‡ "Lancet," Jan. 30, 1875.

§ *Ibid.*

‖ "Med. Times and Gaz.," 1877, ii, p. 358.

To sum up the results of the investigation, we find that belladonna and pilocarpus are antagonistic in their action: 1. On the secretions, especially of sweat and saliva, pilocarpus promoting, and belladonna arresting, them. 2. On the heart and arterial system, pilocarpus slowing and enfeebling the heart and depressing the vascular tonus—belladonna stimulating the cardiac movements and raising the arterial tension. 3. On the eye, pilocarpus contracting the pupil, inducing spasm of accommodation, and approximating the nearest and most remote points of vision—belladonna dilating the pupil, paralyzing accommodation, and making the vision presbyopic.

On the brain there is no real antagonism. The excitement, the delirium with hallucinations and illusions, and the subsequent coma, caused by atropia, are not affected by any of the actions of pilocarpin. The soporose state brought on by the latter, as I have pointed out, is a secondary effect, the result of exhaustion and cerebral anæmia.

Continuing the subject of the antagonistic relations of atropia, we have next to consider the mutual interactions of

ATROPIA AND MUSCARIA.

As muscaria, or muscarine, is comparatively little known, it may be useful to make a preliminary statement of its history and characteristics. It is obtained from amanita muscaria—the fly fungus. We owe to Schmiedeberg and Koppe the discovery of the alkaloid, and to Schmiedeberg and his pupils the full and accurate information now in our possession in regard to its physiological actions.* Muscarine has strong alkaline and basic properties, uniting with acids to form salts. It is a colorless substance having the consistence of syrup, is readily soluble in water, and its salts deliquesce rapidly on exposure to air. It seems to be actively toxic—$\frac{1}{30}$ grain producing in the human subject very decided symptoms. The effects, taking a general view, are as follows: Considerable gastro-intestinal disturbance, nausea, vomiting, and diarrhœa, and violent colic, due to a tetanic contraction of the muscular layer of the bowel, are produced by it. An active and rather pleasurable delirium, rambling, and incoherence, not unlike that of alcohol, are caused by the fungus, so that it is used as an intoxicant by some of the inhabitants of eastern Asia. In toxic doses, the excitement is followed by more or less profound stupor, epileptiform attacks, trismus, and abolition of all reflex movements. During the stage of pleasurable intoxication, the pupil is contracted, vision is dim, objects are seen as through a mist, and also, probably, double. The action of the heart is weakened and finally arrested in the diastole, the respiration is labored and stertorous, the salivary secretion is increased, the surface of the body becomes cold, and death ensues from failure of the heart.

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* "Das Muscarin, das giftige Alkaloid des Fliegenpilzes," etc., Leipzig, 1869; also, "Arch. f. exper. Pathol. u. Pharmacol.," iv and vi. Hermann, *op. cit.*

On the brain, it is probable that muscaria acts in two modes, directly and indirectly; it first excites the cells of the gray matter, and ultimately paralyzes them; the heart being weakened, less blood passes to the brain, and hence this organ is in a condition of anæmia. On the eye, muscarine produces peculiar effects. It causes spasm of the accommodation, and a marked degree of myosis, by stimulation of the motor oculi. The vision is disturbed, therefore, by the spasm of the accommodative apparatus, and by the myosis, which limits the amount of light admitted to the retina.

The secretions generally are increased by muscarine, but it especially stimulates the salivary secretion. According to Prévost,* the bile and the pancreatic and urinary secretions are increased. It promotes the salivary secretion by stimulating the end organs of the nerves, and this is independent of a centric influence, for it takes place after the trunks of the nerves have been divided.† It is probable, if Prévost's view is correct, that the increase of the other secretions is due to the same mode of action.

A slight and momentary increase in the cardiac movements is first produced by muscarine, but this is followed by retardation. Direct application of this agent arrests the heart in the diastole, but mechanical, chemical, or electrical irritation will induce contraction. Section of the vagi does not prevent this effect. It may therefore be concluded that muscarine acts on the motor ganglia in the substance of the heart, and not on the muscle, nor on the apparatus of inhibition. A very considerable decline in the blood pressure is a constant result, after a short preliminary rise. The walls of the vessels relax, as Bogosslowsky ‡ has shown, and, as the action of the heart is at the same time depressed, it is obvious that the vascular tension must be reduced. During the stage of delirious excitement, the respiration is rather hurried, but, when the subsequent depression comes on, the respiration becomes slower and shallower, this result being due to a paralyzing action of muscarine on the respiratory centers.

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* "Gaz. Méd. de Paris," 1870, iii, p. 243.

† F. A. Falck, "Der Antagonismus d. Gifte." Volkmann's "Samml. klin. Vortr.," No. 159, 1879.

‡ "Centralbl. f. d. med. Wissensch.," 97, 1870.

When we come to compare these disturbances of function caused by muscaria with those produced by atropia, we must admit, with Schmiedeberg, that no example of physiological antagonism could be more exact. On the brain, the intoxication, with cerebral anæmia, of muscarine is opposed by the active delirium and cerebral hyperæmia of atropia. On the eye, the contracted pupil of muscaria, due to stimulation of the circular fibers innervated by the third nerve, is opposed by the dilated pupil of atropia, produced by stimulation of the radiating fibers, innervated by the sympathetic. The effect of atropia on the eye is relatively more powerful, for, when the pupil is contracted by muscarine, it can be dilated by atropine, but, when dilated by atropia, it can not then be contracted by muscarine. On the function of secretion, the antagonism is not less striking. Muscarine promotes the salivary secretion by stimulating the end organs of the nerves in the gland, and atropia arrests this secretion by paralyzing these nerves.* But atropia is relatively more powerful here, also, for, when the salivary secretion is arrested by atropia, muscaria can not reëstablish it, yet the secretion caused by the latter is promptly arrested by the former. This opposing mechanism probably extends to the hepatic and pancreatic secretions as well. The intestinal cramp caused by muscarine is removed by atropine. On the heart, nothing can be more perfect than the opposing actions of these agents. I brought this fact forward in my opening lecture as a striking exemplification of the doctrine of antagonism. If the heart is arrested in the diastole by muscarine, it is started again by atropia. If an animal is first brought under the influence of atropia, the heart is not stopped by muscarine, notwithstanding it is so readily poisoned by this agent. The antagonism is equally exerted on the respiratory function—muscarine lessens the respiratory movements and finally arrests them, while atropia stimulates this function.

Thus, viewed from all sides, these agents are exactly antagonistic. Is a function disturbed by one agent in a particular mode, it is also disturbed by the other agent in an opposite mode. In fact, we should search in vain for an illustration of the law of antagonisms more perfect than that subsisting between atropia and muscaria.

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* Luchsinger, "Die Wirkungen von Muscarin u. Atropin auf d. Schweissdrüsen d. Katze," etc., "Archiv. f. d. ges. Phys.," 18, 1878, p. 501.

Notwithstanding the rather formidable list of antagonisms in which atropia appears on one side, we have by no means exhausted its capabilities. Let me invite your attention, briefly, to the supposed opposition of actions between

ATROPIA AND QUINIA.

The only systematic experimental investigation of the antagonism between atropia and quinia which I have been able to find is that of Pantelejeff.* Clinical experience on this point is abundant enough, but we are not now concerned with this aspect of the question. Pantelejeff has ascertained that quinia arrests the heart in diastole, and that the subsequent administration of atropia causes the heart to resume its contractions. This result was observed both in frogs and in rabbits. In the latter animals, when the action of the heart was resumed after the suspension of its movements, the auricles began to contract before the ventricles. Examination of the web of the frog's foot disclosed the interesting fact that, after the subcutaneous injection of quinia, the caliber of the arterioles was lessened by contraction of their walls, while the opposite effect, or dilatation, followed the administration of atropia. Quinia causes a rise in the blood pressure, after a brief preliminary fall, and atropia retards it.

BROMAL HYDRATE AND ATROPIA.

One of the subjects undertaken by the Committee of the British Medical Association, to whose important labors I have so often to refer, was the investigation of the antagonism of bromal hydrate and atropia. This research was especially in charge of Professor McKendrick, and the scope of it was limited to the lethal effects. All of the facts are comprehended in the conclusions to which he was conducted by his experiments, as follows:

"1. There is a distinct physiological antagonism between bromal hydrate and atropia. 2. After a fatal dose of bromal hydrate, the introduction of atropia arrests excessive secretion from the salivary glands and mucous surfaces of the lungs, and thus obviates the tendency to death from asphyxia caused by the accumulation of fluids in the air passages. Atropia also causes contraction of the blood-vessels, and thus antagonizes the action of bromal hydrate, which causes dilatation of these vessels by paralysis of the sympathetic nerve. 3. While atropia may save life after a fatal dose of bromal hydrate, the converse apparently does not hold good, as we never have succeeded in saving life after a fatal dose of atropia by the subsequent injection of bromal hydrate."

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* "Lancet," July 31, 1880, p. 176.

ATROPIA AND ACONITE.

The last application of the physiological antagonism of atropia is that with aconite, for which we are indebted to Dr. J. Milner Fothergill.* These researches are not extensive, but they probably represent the actual state of the antagonism. *A priori*, a very perfect and extended opposition of actions would be presumed to exist. Aconite, a respiratory and cardiac depressant, ought to be neutralized by atropia, a respiratory and cardiac stimulant. The facts, in the main, support this supposition. "Thus, to a rabbit weighing 2 lbs. 6 oz., I gave," says Dr. Fothergill, "three grains of atropia, and six minutes afterward $\frac{1}{300}$ grain of aconitine; the animal survived. A week afterward, the same rabbit had the aconitine alone, and died in two hours and a half." Small doses of atropia, he found, had very striking effects on animals to which lethal doses of aconitine had previously been administered. The animals all recovered from doses of aconitine which subsequently killed them all when administered without the atropia. "It was found, however, that, if the administration of the atropia was delayed beyond sixteen minutes, it was powerless to arrest the lethal action of aconitine."

In the discussion of physiological antagonisms thus far, atropia has been one of the agents concerned in every instance. But atropia also represents a group. One of the triumphs of modern organic chemistry is the reconstruction of organic alkaloids by synthesis, the physiological demonstration confirming, in the most unmistakable manner, the accuracy of chemical methods. Atropia has been thus reconstructed synthetically from two secondary products. Not less interesting is the demonstration that apparently different alkaloidal principles, obtained from separate and independent sources, are the same. Atropia, daturia, and hyoscyamia are thus shown to be identical in chemical composition. These, however, are so closely related in origin that identity of composition is not surprising. A new mydriatic has been recently discovered, whose relationship to atropia, on the physiological side, is most intimate—*duboisia*, the alkaloid of duboisia myoporoides. This new principle has the same power to dilate the pupil, to paralyze the accommodation, to produce a busy delirium, with hallucinations and illusions. It has, also, the same power to increase the rate of cardiac movement, to raise the arterial pressure, and to flush the surface, to produce the same stimulating effect on the respiratory function, the same rise of temperature. It has, also, the same effect on secretion, and dries the mouth and fauces in the same degree. Besides its more ready influence on the pupil, the more rapid decline of its effect, and its less irritating action on the conjunctiva, besides its less deliriant and greater hypnotic power, duboisia seems to have the same physiological effects as atropia. The late researches of Ladenburg seem to prove that duboisia is identical with hyoscyamia. In the whole range of the wide antagonisms of atropia, duboisia may take its place, and the facts true of atropia are applicable to duboisia and also to hyoscyamia. Duboisia may, therefore, be substituted for atropia in the antagonism with morphia, with physostigma, with pilocarpin, with muscarin, with quinia, with bromal hydrate, and with aconite. Special researches have been conducted with duboisia in respect to the antagonism with muscarin, and with pilocarpin. It exhibited in these trials precisely the same powers as atropia, although, on the whole, it acted somewhat more energetically in corresponding doses. Thus, in a short time after its introduction to professional notice, duboisia is as fully understood, in respect to its powers and uses, as belladonna after centuries, but the one is studied by the modern physiological method, and the other, coming down with vague traditions and baseless theories, is only properly understood at last when the progress of physiological research enables new investigations to conduct to right conclusions.

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* "The Antagonism of Therapeutic Agents." Philadelphia, 1878, p. 41.

(*To be concluded.*)

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Editorials.

THE NATIONAL BOARD OF HEALTH ON NOMENCLATURE.

The "National Board of Health Bulletin," Supplement No. 9, contains a report of the Committee on the Nomenclature of Diseases and on Vital Statistics, also a communication from the committee addressed to the Registrar of the Royal College of Physicians, London, England. The report is in every way admirable, and so is the body of the communication to the College of Physicians; but appended to the latter are documents setting forth certain proposed changes in the nomenclature of diseases of the eye and ear (by Dr. Swan M. Burnett, of Washington), of those of the nervous system (by Professor H. C. Wood, of Philadelphia), and of those of the genito-urinary organs of females (by Dr. James R. Chadwick, of Boston). These lists abound in typographical errors, which may account for some of their peculiarities, but there are features in them that can not be so explained.

In the first place, in the "list of names of diseases not given in the index of the nomenclature of the Royal College of Physicians," we find "aphasia" and "dyspareunia," which are symptoms, not diseases; "chloasma," which is indefinite; "spinal irritation," a questionable expression; "anosmia," which does not mean *loss of the sense of smell* (as it is evidently supposed to), but *lack of odor;* and "oophorectomy," which is a surgical operation, not a disease. In Dr. Burnett's list, the terms "spongy (gelatinous) choroiditis," "trachomatous conjunctivitis," "perikeratitic hypertrophy of the conjunctiva," "trachoma," "punctate (pyramidal) keratitis," "kerato-iritis," "rheumatic iritis," "incomplete cataract," "acarus folliculorum," "chromidrosis (blepharal melasma)," "nyctalopic retinitis," and "oxaluric retinitis" seem unnecessary. "Serpent ulcer of the cornea," "double hearing with both ears," and "Ménière's complex of symptoms" seem to be unnecessarily awkward expressions. "Irito-ectotomy" is unintelligible, and "pannous keratitis" and "tenonitis" are positively barbarous. It is questionable if "essential phthisis bulbi" should be classed under the head of glaucoma. "Blepharospasm" figures twice, while "iridodialysis" is omitted. "Spinal irritation," a term that we have already alluded to, appears in Professor Wood's list, and we object to "cerebritis" as a mongrel word. Dr. Chadwick's remarks are in the main very sensible, but we think he errs in thinking it necessary to include among the complications of pregnancy all the ailments that have ever been known to coexist with that condition. We have already objected to "dyspareunia," and we object also to "sterility," "masturbation," "offensive lochia," "conical pregnancy," and "rape."

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Reviews and Literary Notes.

Leçons Cliniques sur les Maladies des Femmes. Par T. Gallard, Médecin de la Pitié, etc. Seconde édition, revue et augmentée. Avec 158 figures intercalées dans le texte. Paris: J. B. Baillière et Fils, 1879. Pp. vi–1000.

Although the first edition of M. Gallard's Lectures is often referred to by gynæcological writers, the work is so little known to the profession at large in this country that we feel justified in giving it a more thorough notice than a second edition generally calls for, more especially as the scope of the book is quite materially altered. Diseases of the ovaries and those of the pelvic structures other than the uterus are not considered in the present volume, but the author promises us a supplementary work on the diseases of the ovaries and the disorders of menstruation. Although it is not mentioned that the forthcoming book will include the non-visceral pelvic affections, we trust that that most important part of the subject will not be omitted.

The book opens with an historical sketch of gynæcology, to which seventy-seven pages are devoted, followed by forty-seven pages of anatomical considerations. The author thinks that the view that the normal shape of the virginal uterus is that of anteflexion has been carried too far. His own idea is, that in the fœtus and the neonata the body of the organ is so soft and unstable that it has no fixed position, but follows the movements of the neighboring organs, to which it clings more or less closely by reason of "*la viscosité péritonéale.*" This viscosity, he says, causes it to follow the bladder when the latter is pulled forward through an abdominal incision in the cadaver, and thus, when so examined, to appear anteflexed. He omits to state why the same viscosity does not act upon its posterior surface, and restrain it from following the bladder.

After this introductory matter, we have seventy-seven pages devoted to the embryology and malformations of the genital organs, and one hundred and twenty-two to their physical examination, before we come to the consideration of the individual diseases. Of the latter, inflammations of the vulva, including the vulvo-vaginal gland, are accorded thirty-five pages; inflammation of the vagina and urethra, urethral polypi, and vaginismus, sixty-four; the inflammatory affections of the uterus, three hundred and thirty-six; supra-vaginal elongation of the cervix, sixty-nine; fibrous tumors of the uterus, ninety-two; and cancer of the uterus, seventy-two. In this notice we shall not attempt to follow the author step by step, but shall first consider his pathology and etiology, then his remarks upon diagnosis, and after that what he says of treatment.

Our enumeration of the contents of the volume, showing the space devoted to the inflammatory affections, will convey an idea of the part accorded by our author, in common with most French writers, to inflammation in uterine pathology. Much that, among us, would be set down to the account of subinvolution or hyperplasia, M. Gallard calls metritis. It must be confessed that, from a clinical point of view, it is an advantage to do away with that multiplicity of vague and really meaningless terms (distinctions without a difference) that cumber the pages of so many authors. In practice, it is well, of course, to make out pathological minutiæ, and to trace their connection with other clinical facts, but they should not be allowed to play the leading part. The author is not an extremist in this matter, for he expressly cautions the reader against the view that all uterine pathology rests upon inflammation, as well as against the idea that the latter is never met with pure and simple. We think we discern, on the part of contemporary gynæcological writers, a tendency to return to the inflammation theory of uterine pathology—a ground that the French have never forsaken. Schröder might be cited as an example. We confess our own leaning in this direction; for, using the term inflammation in its broad sense, and not restricting it to acute or subacute processes, or to conditions that originated in such processes, it, and it alone, seems to us to cover the morbid changes that, however much they may differ in their superficial features, all produce results such as inflammation of similar structures ordinarily leads to, and require for their removal the measures that common experience directs against inflammation. M. Gallard very properly insists upon drawing a line of distinction between uterine inflammation as observed by obstetricians and the affections met with by gynæcologists, which, while nosologically the same, are widely different clinically. Possibly a failure to draw this line has led men to look askance at the inflammation pathology.

Metritis, says the author, is almost always chronic from the start, but he maintains that it is sometimes the relic of an acute metritis—especially of the "post-puerperal" metritis of Chomel. He very properly declines to admit the existence of an hæmorrhagic variety of metritis, however useful the expression may be merely as a descriptive term. The enlarged, soft, engorged uterus of the early stage of inflammation changes at last, according to M. Gallard, to a condition of sclerosis due, he thinks, to the pressure of new material—a luxuriant proliferation of the cellular tissue—upon the vascular and muscular structures of the organ. This feature in the progress of the disease he refers to repeatedly, and we do not remember to have seen it so vividly and cleverly set forth by any other writer.

As to the causes of metritis, the author seems to think the disease is often favored by a city life—at least, he considers this a fair inference from the fact that puberty occurs earlier in cities than in the country. He quotes without comment Scanzoni's statement that in Germany the affection is most commonly due to masturbation, which the latter author declares to be a settled practice in all the convents and boarding-schools of that country. The influence of constitutional causes, the "dartrous diathesis," for example, in impressing certain peculiarities upon uterine inflammation, M. Gallard thinks undeniable ; but, while admitting the practical import of this fact, as pointing to the necessity of constitutional treatment, he flatly denies the existence of any such thing as an acne, a herpes, or an eczema seated upon the cervix, by the mere look of which one might say that the patient was affected with this, that, or the other diathesis. He justly maintains, however, the effect of uterine disease, or the consequent lowering of the general health, in the production of various diseases of the skin. Laceration of the cervix is mentioned as one of the causes of uterine inflammation, but no special stress is laid upon it, nor is it regarded as of any further significance.

How little importance our author attaches to the mechanical theory of uterine pathology may be inferred from the fact that versions, flexions, etc., are barely referred to once or twice incidentally. On former occasions we have signified our disapproval of the prominence that has been accorded to these abnormalities by many contemporary writers, but we must say that, in our opinion, M. Gallard goes to the other extreme. A displacement, a malposture, or a distortion of the uterus is undoubtedly the fundamental trouble in some cases of uterine disease.

Vaginismus the author regards as a neuralgia, but we can not admit that his arguments in favor of that view are very cogent. He considers the term (the invention of which is the only thing in connection with the subject for which he gives Dr. Sims credit) objectionable. Doubtless it is made to cover some conditions that ought not to be included under it, but in itself it seems to us to answer very well, and indeed to be peculiarly appropriate, with due limitation. While recognizing that a local abnormality may be the cause of the affection, M. Gallard lays stress upon the neurotic conditions that may give rise to it, specifying with some emphasis a disordered condition of the nervous system due, in his opinion, to a lack of knowledge, on the husband's part, of what we may call the amenities of copulation. His handling of this subject is very interesting and delicate, and we join unreservedly in his wish that fathers would oftener enlighten their sons upon this aspect of the marital relation.

As to matters of diagnosis, the author affirms that, save in rare and exceptional instances, the healthy ovary can not be recognized. Whenever it can be felt, and pressure upon it causes pain, it is diseased and probably inflamed. In inflammatory affections of the uterus, or of neighboring parts, the temperature of the hypogastric region shows, he says, an elevation readily perceived by the hand, although the thermometer may not always reveal it. In speaking of simple digital examination by the vagina, the very sensible advice is given to carry the finger to the cervix at once, reserving palpation of the adjoining parts until afterward. In bidigital recto-vaginal palpation (a most valuable means of exploration, too often ignored by authors), M. Gallard very properly advises the use of two digits of one hand, rather than of the two index fingers. We have found the thumb and index the most serviceable, but he favors the use of the index and medius.

Mattei's "*ballottement utérin*" (in which the repercussion of the enlarged uterus, and not that of a fœtus, is elicited) the author regards as of questionable value in the differential diagnosis between chronic metritis and pregnancy, because it may be wanting in the early part of pregnancy, and, if present, denotes only an enlargement of the uterus, without shedding any light upon the cause of such enlargement. He describes a form of "ulceration" of the cervix—fungous, violaceous, even livid, and somewhat hæmorrhagic—which he considers often characteristic enough to justify a suspicion of incipient pregnancy. Certainly nothing more than a suspicion, we should say. The term ulceration is used by M. Gallard with a freedom that has almost disappeared from the contemporary literature of gynæcology. Such affections of the exterior of the cervix, he says, never give rise to symptoms.

In the matter of specula, the author prefers Ricord's instrument. He points out the great advantage of Sims's speculum in allowing of digital manipulation at the same time, but, like almost all French writers, he does not seem to appreciate the great value of the instrument, and surely it is ungracious to speak of it as only Jobert's retractor perfected! M. Gallard seems to think highly of Dr. Bozeman's speculum, however, and he states that he has found it a very satisfactory instrument, not only in small operations where an assistant would otherwise be needed, but also as a dilator in cases of vaginismus.

The dangers of the sound are duly felt by the author, but, *per contra*, he brings out very justly the fact that unpleasant occurrences after its use are often mere matters of coincidence. The practice of attempting to feel the point of the instrument through the abdominal wall he regards as risky and unnecessary; and we would say the same of the use of the sound as a means of ascertaining the mobility of the uterus. When the sound is used upon a patient for the first time, says M. Gallard, it commonly causes some pain and a trifling escape of blood—a statement that does not tally with our experience. We can not divine why the advice is given to withdraw the speculum as soon as the sound has penetrated two or three centimetres into the cervical canal; indeed, with any other instrument than Sims's the withdrawal we should suppose to be an awkward thing to do with the sound still in the cervix. We do not remember any other writer who gives such a clever hint, in regard to the management of women who resort to a physician for the base purpose of inveigling him into producing abortion by the use of the sound, and who do not scruple to make false statements about the date of their last menstruation, as that in which our author suggests that the patient be asked to return *during menstruation*, when the actual flow may be witnessed, and all doubt set at rest. How shall the difficulty be got over in cases of suspected hydrometra? Here, says M. Gallard (p. 654), the diagnosis is beset with difficulties, for it is almost inadmissible to use the sound, which alone might clear it up. If, however, these patients are carefully observed, we shall soon ascertain that at certain times the vaginal discharge is more copious than usual; that this discharge is thinner and more grayish, and stiffens the napkin less than the ordinary secretion; and that during the few days following its escape the uterus is less voluminous, less tumified, and, above all, less globular than at other times. If we now use the sound, we can make out dilatation of the uterine cavity.

Trouvé's polyscope is highly recommended as a means of illuminating the vagina. To ascertain the capacity of the uterine cavity, M. Gallard urges a device that, he states, he resorts to very often, but that we can not but regard as questionable. It consists in slowly injecting water into the uterus with a graduated syringe, and noting the moment at which it begins to escape. The difference between the quantity in the syringe to begin with and that remaining in it at this moment shows the capacity in question. Indeed, the author does not seem to share the dread (which we must consider wholesome) that most careful gynæcologists feel in regard to intra-uterine injections. He argues that, notwithstanding experimental demonstrations, we do not find in practice that these injections ever find their way into the peritonæum, although they are largely used—in which statement we think he is mistaken.

M. Gallard declares that gonorrhœa can not be diagnosticated by its symptoms or its physical signs, although, from a pathological point of view, he warmly upholds its specific character. Its course, its persistence, its rebellious tenacity, and its origin are the only guides. He is not ready to admit that paraplegia is entitled to be classed among the affections symptomatic of uterine disease.

On p. 942 we find a statement that, if it stood alone, would go far to guide us in the diagnosis of cancer of the uterus, for M. Gallard declares that, whenever, during his long experience, he has been in doubt, the case has always turned out to be one of some other disease than cancer; and we think his language warrants the inference that such is very likely to be the case with any competent observer. Unfortunately, however, we find on p. 948 the story of a case in which one hospital surgeon diagnosticated chronic metritis with anteflexion, complicated with lumbo-abdominal neuralgia; and another hospital surgeon, interstitial fibroids, with possibly a concomitant cancerous affection engrafted upon an old fibroma. M. Gallard, on the strength of the characteristic odor of the discharge, at once pronounced the disease to be cancer of the cavity of the corpus uteri. Usually, as he remarks, the diagnosis is much simplified by the fact that cancers rarely cause much trouble during their early period, so that they seldom come under our observation until they are so advanced that an error is scarcely possible.

We come now to the matter of therapeutics. So far as concerns the general principles of treatment, we find little, if anything, distinctive in the work, and we must therefore content ourselves with noticing a few details. In the treatment of vaginismus, the author has met with considerable success by means of tampons, but he doubts if the improvement was due to their acting as dilators, and is inclined to attribute their efficacy to an ointment of belladonna or iodoform with which he took care to smear them. Where there is redness or excoriation of the mucous membrane, he prefers iodoform; where there is no visible lesion, belladonna. Of the operations that have been proposed, he approves of only one—the removal of ulcerated or inflamed remnants of the hymen; and prefers cauterization even to that.

The vaginal douche is mentioned under the head of endometritis, but it is evident that M. Gallard does not appreciate the value of copious vaginal injections of hot water as used in this country for various inflammatory affections of the pelvic contents in women. In another part of the work (p. 706), an exceedingly peculiar method of douching the vagina is described as having come to the author's knowledge from a South American lady, who spoke of it as very much in vogue in her country. This lady would assume the knee-chest posture, and the liquid was then poured (by herself?) from a vessel into the vagina, where it would remain as long as she kept her posture.

In hæmorrhagic cases, M. Gallard has found digitalis very efficacious, but, unlike West and Dickinson, he imputes its good effects to its action upon the heart. He uses it in smaller doses than those advised by Dickinson —from five to eight grains of the leaves daily, in the form of an infusion. Ergot he considers as rather injurious than beneficial. Like Aran, he condemns the curette, as being useless in diagnosis and as acting in a random and dangerous manner when used as a means of treatment; yet he admits that, granting the presence of fungosities, there is no treatment more rational than that of abrasion. The difficulty lies in the uncertainty of their removal by the blind use of the curette. That the use of the instrument often cures the patient is due, he thinks, to the fact that the irritation resulting from the scraping gives rise to a fresh inflammation, of a different sort from that of the preëxisting disease—in short, a substitutive affection. The author has had no experience with the intra-uterine application of nitric acid.

In the treatment of parenchymatous metritis, M. Gallard gives iodine internally in almost every case—in (daily?) quantities of from six to twelve drops of the tincture, in mucilage, for eight or ten days every month, beginning by preference at the time when a menstrual flow ought to take place, for it succeeds best, he says, in cases accompanied with dysmenorrhœa or amenorrhœa. Ergot, which, as we have seen, he rejects in the treatment of endometritis, he speaks highly of as restoring the tonicity of the uterus in cases of metritis. We are pleased to find the author protesting against the excessive abuse of mineral waters—all the more so, because his authority ought to avail somewhat against the undue importance accorded to these agents by most French writers.

M. Gallard joins with Seyfert and Scanzoni in condemning the use of leeches in the advanced (cirrhotic) stage of metritis, but thinks the measure very beneficial in the stage of engorgement. He speaks highly also of vaginal tampons imbued with various sorbefacients, particularly the iodide of potassium. Iodoform might be mentioned as the chief of these agents, but, curiously enough, he speaks of it as a caustic, which it certainly is not. On the use of the various other topical applications, our author does not specially differ from most writers.

The discussion of operative measures does not form a prominent feature of the work. As regards the removal of fibrous tumors by laparotomy, the author, like West, condemns it; and he speaks in like terms of total extirpation of the uterus for cancer.

On the whole, M. Gallard's work, while it is not a great one, is replete with points of excellence, and it should certainly be studied by all who aspire to any special knowledge of gynæcology. Less comprehensive than the works of Courty and Nonat, and less satisfactory as regards technics than Guérin's, it seems to us to rank rather with that of Demarquay and Saint-Vel, as a very worthy exponent of the conservative element in French gynæcology.

A Treatise on the Diseases of the Eye. By J. Soelberg Wells, F. R. C. S., etc. Third American from the third English edition, with copious additions. By Charles Stedman Bull, A. M., M. D., Surgeon and Pathologist to the New York Eye and Ear Infirmary, etc. Illustrated with two hundred and fifty-four engravings on wood, and six colored plates, together with selections from the test-types of Professor E. Jaeger and Professor H. Snellen. Philadelphia: Henry C. Lea's Son & Co., 1880. Pp. xix–33 to 895 inclusive.

The present edition of Wells on the Eye possesses a peculiar interest because the death of its author devolved the whole responsibility of its preparation upon another person. The work has justly held a valuable place in English ophthalmic literature, and at the time of its first appearance was the best treatise of its kind in the language. It was written from the standpoint of the Berlin school, the author having been one of Graefe's pupils and devoted admirers. While not notable for originality, it was a broad and painstaking statement of the science of ophthalmology in its practical aspect. In the second edition, the author showed industrious research in adding new material from every quarter, and his spirit was eminently candid. A work thus built up by honest effort should not be suffered to die, and we are pleased to receive this third edition from the hand of Dr. Bull. His labor has been arduous, as the very great number of additions bracketed with his initial testify. Could the lamented author himself have undertaken the task, we doubt not that much more material would have been omitted than the American editor has felt justified in doing. As it is, we recognize the sentiment of delicacy toward the author which has led the editor to spare erasure when possible.

It is an improvement in nomenclature, which the editor has adopted, to reject the vague term ophthalmia and substitute the word conjunctivitis, when the tissue under consideration is the conjunctiva. All through the book we find practical hints thrown in which indicate the views and practice of the present day, and the editor's familiarity with pathology appears in numerous brief addenda on this subject.

It will be proper to specify some particulars in which the American editor has enriched the work: Wolfe's proposal to transplant pieces of conjunctiva from a rabbit to repair losses in the human conjunctiva is duly narrated. Under the head of tumors of the conjunctiva, several are described which are not noted in the original, viz., cysts, both subconjunctival and those which lie very superficially in the orbit and reach forward to the front of the globe, also melanotic epithelioma and sarcomata, primary carcinoma, and papillary fibromata. So, too, syphilis of the conjunctiva is described, and the "lesions are eruptions, ulcerations, and infiltrations; and under the second head are to be included not only the chancre, but also secondary ulcers resulting from the breaking down of infiltrated masses. The chancre is a rare lesion on the conjunctival surface alone, as in most of the reported cases the initial ulcer was on the margin of the lids, and involved both skin and mucous membrane. But it does occur as a conjunctival lesion alone, as in cases reported by Desmarres, Sturgis, Galezowski, Bumstead, Bull, and others." (Page 128.) The rare conditions of amyloid degeneration and tuberculosis of the conjunctiva are described. The facts are gathered from American and foreign authors, with a breadth of research which is not met with so frequently as is to be desired.

The author's statements upon the alleged effect of atropine in diminishing intra-ocular tension are qualified by a foot-note of the American editor, who remarks that the general intra-ocular tension in the vitreous is increased by its use. (Page 137.) It was a favorite reason with Graefe for employing atropine, that, in his opinion, it did abate intra-ocular pressure. The latest experiences have tended to quite another opinion, and, according to Priestley Smith, whose treatise on glaucoma is later than the American editor's notes, it is doubtful whether atropine or eserine exerts any influence whatever in this direction. Modern scientific investigations upon ocular tension are made with so-called tonometers, which permit a very close measurement, and the latest instruments of Monnik and Priestley Smith give us more trustworthy results than the best-educated fingers can furnish.

Some marked departures from the author's views are: the danger attaching to abscission of corneal staphyloma, whether done by Critchett's or other methods; and the rejection of the operation of iridesis, because of its liability to cause sympathetic inflammation. In the discussion of sympathetic inflammation, certain statements are greatly qualified, and a fair summary is given of the views which have been published by Meyer, Alt, Wecker, and Mauthner, and which have notably modified the theories and practice of ten years ago.

We turn to the chapter on glaucoma, and here we feel that to have rewritten it would have been the most satisfactory. So much has been contributed to our knowledge of its pathology, that the editor's notes almost supplant the author's work—his pages 586–588 are unavoidably in conflict with some of the author's writing, because our knowledge has been enlarged. Yet we are not fully out into daylight on the subject, and, since the editor's work has been done, elaborate investigations have been published by Priestley Smith, which look toward a theory of pathology unlike any hitherto promulgated.

In the portion devoted to the ophthalmoscope and refraction and accommodation, we find just mention of the work of Dr. Loring and other American authors, but we do not find anything said of the modern mode of numbering glasses by the metric scale, or of the system of arranging the enumeration of glasses by dioptrics. This is destined to supersede the method previously in use, although it has not been practically used so much in this country as it has been in Europe.

Under the editorship which this third edition has enjoyed, the work is sure to sustain its good reputation and to maintain its usefulness.

Atlas of Skin Diseases. By Louis A. Duhring, M. D., Professor of Skin Diseases in the Hospital of the University of Pennsylvania, etc. Part VII. Eczema (Pustulosum), Impetigo Contagiosa, Syphiloderma (Papulosum), Lupus Vulgaris. Philadelphia: J. B. Lippincott & Co., 1880. 4to, pp. 8, and colored plates.

The plates of this number of Dr. Duhring's "Atlas of Skin Diseases" represent eczema (pustulosum), impetigo contagiosa, syphiloderma (papulosum), and lupus vulgaris. We have before taken occasion to speak in high terms of the character of previous parts of this work, and the present fasciculus fully sustains its reputation. The plate representing a papular syphilide is worthy of special commendation, not only from an artistic point of view, but also for its absolute fidelity to nature. The characteristic tint of a syphilitic eruption is most admirably shown, while the grouping of the lesions, their form and gradations of development, the mottled appearance of the skin from the pigmented spots of a previous eruption, faintly seen, as if on the point of vanishing, all unite to form a picture so essentially realistic as to leave nothing to be desired. The descriptive text accompanying each plate is plain and practical, and adapted to the wants of the student and the general practitioner, for whom it is designed.

The Art of Prolonging Life. By Christopher William Hufeland. Edited by Erasmus Wilson, M. D., author of "A System of Human Anatomy," etc. From the last London edition. Philadelphia: Lindsay & Blakiston, 1880. 12mo, pp. 298. [Price, $1.00.]

The learned editor has done a service to many who have often seen references to this curious work, and who must have felt a desire to examine it. The book is exceedingly interesting, especially that portion of it that deals with the history of human longevity. Its perusal should prove a grateful relaxation to many a jaded student of our teeming literature. However little the reader may feel that it has helped him in the strife after length of years, he will at least cherish it as the pleasing reflection of a serene and scholarly mind. The book can readily be understood by any person of ordinary education, and it is certainly to be commended to the laity as being free from the objections that may be urged against most quasi-medical works.

On the Bile, Jaundice, and Bilious Diseases. By J. Wickham Legg, Fellow of the Royal College of Physicians of London, etc. New York: D. Appleton & Co., 1880. Pp. xvi–719.

This volume is evidently the result of a vast amount of labor and research. It is written in a pleasant style, and will be found a good work for reference. The first chapters treat of the chemistry and physiology of the bile. The subject of jaundice is fully considered in all its bearings. The chapter on bilious diseases is a strong plea for a discontinuance of the term "bilious," on account of the "great confusion which exists as to the definition" of the word.

The Skin in Health and Disease. By L. Duncan Bulkley, M. D., Attending Physician for Skin and Venereal Diseases at the New York Hospital, Out-Patient Department, etc. Philadelphia: Presley Blakiston, 1880. 12mo, pp. 148. [American Health Primers.]

This is a most excellent little manual, and one that might well serve as a "primer" for students of dermatology. For a book of its class, the illustrations are of unusual excellence; many of them might be taken for copies from Sappey and Richet.

Aforismos de Dermatología Práctica. Por el Excmo. Sr. Dr. D. José Eugenio Olavide, Médico del Hospital de San Juan de Dios, etc. Madrid: Oficina Tipográfica del Hospicio, 1880. Pp. 49.

This *brochure* consists of two hundred and fifty-seven magisterial statements bearing upon skin disease. Most of them are elementary, embodying facts that may be found laid down in almost any text-book of dermatology. Those that express the author's peculiar views will receive from dermatologists just that consideration that the writer's repute may seem to justify. To the general practitioner, unless he has been a pupil of Señor Olavide's, the work will prove of little service.

Notes on Diseases of Women, specially designed for Students preparing for Examination. By J. J. Reynolds, M. R. C. S. (Eng.). London: J. & A. Churchill, 1880. Sm. 8vo, pp. ix–86.

The author tells us that this little book is chiefly compiled from the works of Dr. Barnes, Dr. Galabin, and Dr. Atthill. Its contents are therefore respectable, and will perhaps prove of some service to gentlemen who are preparing for examination at any of the schools in which those authors' views are taught. It is got up in the attractive style usual with the Messrs. Churchill.

What to do First in Accidents or Poisoning. By CHARLES W. DULLES, M. D., Surgical Registrar to the Hospital of the University of Pennsylvania, etc. Philadelphia: Presley Blakiston, 1880. Small 8vo, pp. 64.

ON a cursory examination of this little book, we find scarcely anything in it that does not seem to us judicious, and it may perhaps be as useful as most others of the sort. The suggestion to treat severe (dangerous) burns by immersing "the entire body in a bath, which shall be kept as long as necessary (and this may be several days) at a temperature of 100° or more," seems to us, however, to exceed the scope of "what to do first."

BOOKS AND PAMPHLETS RECEIVED.—A Manual of Medical Jurisprudence. By Alfred Swaine Taylor, M. D., F. R. S., Fellow of the Royal College of Physicians, etc. Eighth American edition, from the tenth London edition. . . . Edited, with additional notes and references, by John J. Reese, M. D., Professor of Medical Jurisprudence and Toxicology in the University of Pennsylvania, etc. With illustrations on wood. Philadelphia: Henry C. Lea's Son & Co., 1880. Pp. xx–17 to 933, inclusive. ═══ Stricture of the Male Urethra: its Radical Cure. By Fessenden N. Otis, M. D., Professor of Genito-urinary Diseases in the College of Physicians and Surgeons, New York, etc. New York: G. P. Putnam's Sons, 1880. Pp. xxvii–360. ═══ Diagnosis and Treatment of Ear Diseases. By Albert H. Buck, M. D., Aural Surgeon to the New York Eye and Ear Infirmary, etc. New York: William Wood & Co., 1880. Pp. vii–411. [Wood's Library of Standard Medical Authors.] ═══ An Elementary Treatise on the Function of Vision and its Anomalies. By Dr. Giraud-Teulon, member of the Academy of Medicine, Paris, etc. Translated from the second French edition by Lloyd Owen, F. R. C. S. I., Surgeon to the Birmingham and Midland Eye Hospital, etc. London: Baillière, Tindall & Cox, 1880. Pp. viii–158. ═══ A Practical Treatise on the Diseases of Women. By T. Gaillard Thomas, M. D., Professor of Diseases of Women in the College of Physicians and Surgeons, New York, etc. Fifth edition, enlarged and thoroughly revised. Containing two hundred and sixty-six engravings on wood. Philadelphia: Henry C. Lea's Son & Co., 1880. Pp. xx–17 to 806, inclusive. ═══ A Treatise on Diphtheria. By A. Jacobi, M. D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, New York, etc. New York: William Wood & Co., 1880. Pp. x–252. ═══ Hand-Book of Chemical Physiology and Pathology, with Lectures upon Normal and Abnormal Urine. By Victor C. Vaughan, M. D., Ph. D., Lecturer on Medical Chemistry in the University of Michigan, etc. Third edition, revised and enlarged. Ann Arbor: Ann Arbor Printing and Publishing Co., 1880. Pp. 351–32 ═══ A Practical Treatise on Surgical Diagnosis. Designed as a Manual for Practitioners and Students. By Ambrose L. Ranney, A. M., M. D., Adjunct Professor of Anatomy . . . . in the Medical Department of the University of the City of New York, etc. Second edition, enlarged and revised. New York: William Wood & Co., 1880. Pp. xiii–471. ═══ The Descriptive Atlas of Anatomy: a Representation of the Anatomy of the Human Body, in 92 royal 4to plates, containing five hundred and fifty figures. Philadelphia: J. B. Lippincott & Co., 1880. 4to plates and pp. 11 of index. ==== On the Construction, Organization, and General Arrangements of Hospitals for the Insane: with some Remarks on Insanity and its Treatment. By Thomas S. Kirkbride, M. D., LL. D., Physician-in-Chief and Superintendent of the Pennsylvania Hospital for the Insane, at Philadelphia, etc. Second edition, with revisions, additions, and new illustrations. Philadelphia: J. B. Lippincott & Co., 1880. Pp. 320. ==== Clinical Lectures, and Cases with Commentaries. By Henry Thompson, M. D., M. A. Cantab., F. R. C. P. Lond., Consulting Physician to the Middlesex Hospital. London: J. & A. Churchill, 1880. Pp. x–197. ==== Food for the Invalid, the Convalescent, the Dyspeptic, and the Gouty. By J. Milner Fothergill, M. D., Edin., Member of the Royal College of Physicians of London, etc., and Horatio C. Wood, M. D., Professor of Materia Medica and Therapeutics, etc. New York: Macmillan & Co., 1880. Pp. 157. 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Pp. viii–17 to 228, inclusive. [Price, $1.25.] ==== The Orthopragms of the Spine: an Essay on the Curative Mechanisms applicable to Spinal Curvature, exemplified by a typical collection lately presented to the Parkes Museum of Hygiene, University College, London. By Robert Heather Bigg, Assoc. Inst. C. E. London: J. & A. Churchill, 1880. Pp. x–149. ==== Cutaneous and Venereal Memoranda. By Henry G. Piffard, A. M., M. D., Professor of Dermatology, University of the City of New York, etc., and George Henry Fox, A. M., M. D., Surgeon to the New York Dispensary, etc. Second edition. New York: William Wood & Co., 1880. 16mo, pp. viii–309. ==== Ophthalmic and Otic Memoranda. By D. B. St. John Roosa, M. D., Professor of Ophthalmology in the University of the City of New York, etc., and Edward T. Ely, M. D., Assistant to the Chair of Ophthalmology, University of the City of New York, etc. Revised edition. New York: William Wood & Co., 1880. 16mo, pp. xii–298. ==== How a Person Threatened with Bright's Disease ought to Live. By Joseph F. Edwards, M. D. Philadelphia: Presley Blakiston, 1881. 12mo, pp. 87. [Price, 75 cents.] ==== Higher Education of Medical Men, and its Influence on the Profession and the Public; being the address delivered before the American Academy of Medicine . . . . September 28, 1880. By F. D. Lente, A. M., M. D., President of the Academy, etc. New York: Chas. L. Bermingham & Co., 1880. Pp. 16. ==== Proceedings of the Academy of Natural Sciences of Philadelphia. Part ii, April to September, 1880. ==== St. George's Hospital Reports. Edited by Thomas Tillyer Whipham, M. B., F. R. C. P., and

Thomas Pickering Pick, F. R. C. S. Vol. x, 1879. London: J. & A. Churchill, 1880. Pp. xiii–662. ═══ Transactions of the American Otological Society. Thirteenth annual meeting, Newport, R. I., July 21, 1880. Vol. 2, part 4. ═══ Supplementary. Time of Conception and Duration of Pregnancy. By George J. Engelmann, M. D. ═══ Surgical Treatment of Naso-Pharyngeal Catarrh. By D. H. Goodwillie, M. D., D. D. S., etc. [Reprint.] ═══ The Necessity and Importance of Mortuaries, etc. By Henry C. Burdett. [Reprint.] ═══ The Unhealthiness of Public Institutions. [By Henry C. Burdett? Reprint?] ═══ Light in the Public Schools, and School Life in relation to Vision. By C. J. Lundy, M. D., etc. [Reprint.] ═══ The Dangers incident to the Simplest Uterine Manipulations and Operations. By George J. Engelmann, M. D. [Reprint.] ═══ A Device to Facilitate the Removal of Deep Wire Sutures in the Operation for Ruptured Perinæum. By Aug. F. Erich, M. D. [Reprint.] ═══ Seven Cases of Retroflexion of the Uterus, with Peritoneal Adhesions of the Fundus in the Hollow of the Sacrum, Treated by Forcible Separation of Adhesions. By Aug. F. Erich, M. D. [Reprint.] ═══ Some Practical Suggestions in the Treatment of Diphtheria. By R. J. Nunn, M. D. [Reprint.] ═══ Suggestions as to the Therapeutic Value of Rest in the Treatment of Laryngeal Diseases. By Beverley Robinson, M. D. [Reprint.] ═══ Psychological Aspect of the Laros Case, etc. By Dr. Edward C. Mann. [Reprint.] ═══ The Symptoms of Sexual Exhaustion (Sexual Neurasthenia). By George M. Beard, A. M., M. D. [Reprint.] ═══ The "Abdominal Method" of Singing and Breathing as a cause of "Female Weaknesses." By Clifton E. Wing, M. D. [Reprint.] ═══ The Pathology and Treatment of Epulis. By N. Senn, M. D. [Reprint.] ═══ The Medical Record Visiting List, or Physician's Diary for 1881. New York: William Wood & Co.

Proceedings of Societies.

NEW YORK CLINICAL SOCIETY.

A regular meeting was held September 24, 1880, Dr. J. H. Emerson chairman for the evening.

Reflex Cough.—Dr. Katzenbach reported a case of harassing cough in a man, aged twenty-six, of somewhat intemperate habits. He had taken cold a few days before, and had some fever, with a mucous and bloody expectoration. There was redness of the vocal cords, but no physical signs in the chest. One evening, while coughing violently, a hernia occurred. The paroxysms of coughing were most obstinate and violent. The patient grew worse for two or three weeks and lost weight, the oxalate of cerium, anodynes, quinine, and abstinence from alcohol having been tried without benefit. The cough was finally looked upon as reflex from the stomach. Codeine gr. $\frac{1}{8}$, bismuth subnitrate gr. xv, and oxalate of cerium gr. ijss. gave immediate relief. There were no symptoms pointing to the stomach, except loss of appetite and redness of the tongue.

PUERPERAL PARALYSIS.—Dr. DELAVAN reported a case of paralysis from pressure upon the sciatic nerve during childbirth. The patient, aged twenty-six, had a justo-minor pelvis, especially narrow at the brim. The child was very large, with the head and bony structures well developed. The head presented in the right occipito-posterior position, but did not advance beyond the brim, and the labor became powerless. The forceps was applied, and the child was extracted without much difficulty. Immediately after delivery there was complete paralysis of the muscles supplied by the left sciatic nerve. There was also hyperæsthesia in some parts of the limb, and anæsthesia in others. The woman had had sciatica before. The paralysis was attributed to pressure by the head of the child or by the forceps. Recovery had been slow, but was now, six months after labor, complete.=====Dr. KATZENBACH had seen somewhat similar cases—once after a craniotomy. The paralysis was also attributed to pressure.

TRAUMATIC PARALYSIS OF THE INFRA-ORBITAL NERVE.—Dr. DELAVAN reported a case of paralysis of the infra-orbital portion of the fifth nerve, thought to be rare. The patient was a man, aged twenty-eight, who, ten days before, had received a blow on the right eye with a slung shot or brass knuckle. He had a "black eye," and within twenty-four hours after the accident there was loss of sensation on the right side of the nose and the right half of the upper lip and gum, with loss of the sense of smell on the right side. There was hyperidrosis of the affected region, with swelling of the mucous membrane of the nostril.

FRACTURE OF THE FEMUR AFTER AMPUTATION OF THE LEG.—Dr. BULL reported the case of a man who had had his leg amputated below the knee a few years ago, since which time he had worn an artificial limb, and who had fractured the femur just above the socket of the false leg. He had caught the leg in a way to pry off the end of the femur, so to speak. Dr. Bull had seen a similar case before, and this patient had met with the accident for the second time. The fracture had been reduced under anæsthesia with ether, and recovery had occurred without shortening under the use of plaster dressing. The first time, he was treated by extension, and there was a shortening of one inch.

A REGULAR meeting was held October 22, 1880, Dr. G. H. Fox chairman for the evening.

SPINAL PARALYSIS OF THE ADULT.—Dr. EMERSON related the history of a case of this affection, which had ended in recovery. The patient was an employing plumber, forty-eight years old. His habits were temperate and regular. On June 8th he felt some pain in the back and thighs, especially the right one, with a sense of numbness. The sensations in the feet were as if he were treading on bladders. In rising from a chair, he appeared like a person with lumbago. Careful investigation elicited no history of lead poisoning or of syphilis. The only noteworthy point in the past history was that of exposure to cold and dampness in March. His symptoms underwent no appreciable change until June 12th, when he found his right arm weak, and that he could not fully control the movements of his pen. He had some difficulty in going up stairs, and his gate was similar to that in ataxia, but he could stand and walk tolerably well with closed eyes. The knee test for tendon-reflex gave a negative result. Cutaneous anæsthesia was present below the knees. There was no tenderness over the spine at any point, no sense of constriction, no lancinating pains. The bladder was normal; the rectum was sluggish in its action. A sense of numbness was present in the fundament. Neither hand had the normal strength of grasp, but the left was the better of the two. Fluid extract of ergot was ordered, in ten-drop doses, four times a day, with dry cups over the spine. On June 15th, after a restless night, his temperature was 99·37° F., and his pulse 90. He found it difficult to rise from his chair. Quinine was ordered, in five-grain doses, morning and night. On June 16th the pulse was 80, with no fever. On the 18th there was marked increase of weakness and difficulty in ascending stairs. Dr. Seguin now saw him in consultation, and it was further discovered that he had diminished sexual strength. A diagnosis of inflammation of the motor tract of the spinal cord was made. The treatment advised was absolute rest in bed, fluid extract of ergot, in doses of a fluidrachm, three times a day, and the use of cups and of quinine to be continued. Nutritious diet was continued, and gentle friction to the extremities. On the 21st, the faradaic current was used to ascertain the muscular reaction. This was generally good, except in the forearms and the calves of the legs, where, also, the muscles were noticeably flabby and shrunken. From this time to July 9th, there was no special change in the symptoms. On the latter date a mild galvanic current produced no pain, one electrode being placed over the spine and the other employed in stroking the muscles. Seven or eight cells were used at first, and afterward the number was increased. On the 30th, some improvement of his symptoms was apparent, and the dose of ergot was diminished, while a pill containing quinia, strychnia, and ferrum redactum, was substituted for the tonic given before, and a stimulating liniment was ordered instead of the dry cups. The galvanism was now used only every second day, instead of every day. From this date improvement was continuous, and on August 15th he was able to come down stairs. On the 22d, he first went out of doors, and during September he steadily gained strength, some unnatural cutaneous sensations still remaining. In October he was able to attend to business.

Puerperal Fever.—Dr. Smith related the history of a case of cellulitis following childbirth that he had seen repeatedly in consultation. The labor had been severe, and there was some laceration of the cervix, but the perinæum was not much injured. On the fourth day the patient had a severe chill, which lasted an hour and a quarter, and was followed by a temperature of 105° F. After three hours of fever, moderate perspiration ensued. There were pain and tenderness in the hypogastrium, chiefly toward the right iliac fossa. On the fifth day, the same symptoms were present, with a temperature of 105°. On the sixth day the temperature was 104·5° to 105°; and during the remainder of the sickness it did not fall below 102°. There was considerable mental disturbance, with great irregularity of the heart's action, which latter continued throughout the illness. There was cough, but no pulmonary or cardiac lesion. An area of cellulitis, four or five inches in diameter, was diagnosticated. Considerable gastric irritability existed. Opium and stimulants were employed. Quinine by hypodermic injection was found useful, lowering the temperature to 101·5°; but it was necessary to use bromide of sodium by the rectum, in order to control the cerebral disturbance occasioned by the quinine. Stopping all food for most of one day, together with the lowering of the temperature, relieved the gastric disturbance in great measure. On the eighth day diarrhœa was present. No albumen was found in the urine. On the tenth day, hemiplegia occurred, and at the time of the stroke the bladder was involuntarily emptied. The pulse was 160, very weak and irregular, and the face was pallid, the pupils being normal. The bowels were still loose, and the temperature was 105°. Quinine, gr. v, and Magendie's solution, ♏ v, were given hypodermically. Twenty-four hours later, the temperature was 100°, and the patient was talking in a rational manner. Improvement continued, and the patient progressed to recovery.

Puerperal Malarial Paralysis.—Dr. Katzenbach mentioned the case of a lady who, three or four weeks after labor, at five o'clock one afternoon, had complete paralysis of all the extremities. Fever, with a temperature of 102° F., ensued, and sweating. By midnight the sweating had ceased, and the paralysis had passed away. The attack was repeated daily for several days, until gr. xxx of quinine were administered, after which nothing of the kind again appeared.

Acute Pemphigus.—Dr. Delavan related the history of a fatal case of acute pemphigus in a gentleman, seventy-four years of age. His earliest symptoms were fever (a temperature of 102°), malaise, and itching of the chest, arms, and shoulders. There was complete loss of appetite, with some diarrhœa. He also complained of having chilly sensations every four or five hours. In a few hours, erythematous patches appeared, scattered over the body, more marked near the large joints, and a few papules. In twenty-four hours the erythema became general, and in forty-eight hours large and small bullæ were seen over the breast, back, and thighs. The patient grew rapidly worse. The temperature was 105°. Mental confusion and gastric irritability were present. On the third day the general condition grew still worse, and the eruption, in the form of bullæ, appeared on the palms of the hands, the soles of the feet, and the tongue. The heart's action was very weak. In the afternoon of the fourth day, during the absence of the nurse, he got out of bed, fell, and was unable to get up. Mild delirium was constant. On the morning of the fifth day, he suddenly died. The autopsy was unsatisfactory in that it revealed very little in the way of pathological change.

Arsenical Poisoning from Wall Paper.—Dr. Kelsey related some facts regarding arsenical poisoning from wall paper as it had recently occurred in his own person. For the last two years he had suffered from occasional attacks of gastric and intestinal disturbance, attended with slight fever; and from a growing sense of lassitude and inability to do hard work, either mental or physical. The walls of his office were papered with a very rich green "velvet library paper." During a recent house-cleaning the paper was thoroughly swept down, and, as a result, a green powder was observed on the floor all around the edge of the room. On testing this, he found it to be almost pure Paris green. A paper-hanger was sent for to remove the paper, and after working a few hours he was seized with all the symptoms of acute arsenical poisoning, and was obliged to desist. Another who took his place to finish the job suffered in the same way on the following day. It was discovered that at some former time the ceiling had been covered with Paris green, and that subsequently a coat of another color had been laid on over it, and the servant who attempted to wash this was confined to his bed for three days with cramps and diarrhœa. Finally, two members of Dr. Kelsey's household, who had taken considerable interest in what was being done, were attacked with similar symptoms; and he himself had one of his old familiar attacks. Since repapering, now six months ago, he had had none of his old trouble.

Relaxation of the Pubic Symphysis.—Dr. Partridge related a case of separation of the pubic bones, produced by childbirth. The patient was a primipara with a poor family history. There was an inherited disposition to pulmonary disease. Her own health had never been good, although she had had but few attacks of illness. She was of slender build, and pale. Both the pregnancy and the labor were normal, and the latter, although her first, was less than eight hours in duration. The second stage lasted one hour, the child being above the natural size. While the patient lay in bed subsequent to labor, she had no decided symptoms of any abnormal state; but she regained strength slowly, complaining of more or less pelvic pain of a bearing-down character, and being unable to move about without pain. On the thirteenth day she was first permitted to use her feet, and found herself utterly helpless. At the time and afterward she experienced great pain across the lower portion of the abdomen. As she lay in bed, an examination was made, revealing moderate tenderness in the suprapubic and iliac regions externally, but no evidence of cellulitis. Slight pressure upon the point of articulation of the pubic bones caused the most excruciating pain. No pain was produced by pressure at a distance of an inch to either side of the median line. There was bilateral fissure of the os, although dilatation had taken place without manual aid. So much pain and exhaustion had been produced that the examination was not then extended further, and a diagnosis of separation at the pubic articulation was made, based upon the history and the condition then existing. She was advised to sit up and use her lower extremities as far as possible without the production of pain. At the end of six weeks she could not stand without great pain, which was much increased when an attempt was made to walk. At the end of eight weeks, the interpubic space was still exquisitely tender upon pressure, and she could take a few steps only, attended by much pain, chiefly in the left groin. While she took a few steps, an examination was made with the index finger in the vagina and the thumb externally, grasping the articulation, and a movement of the bones upon each other, to the extent of half an inch, was apparent. A very strong and broad bandage was ordered for pelvic support. The case had been attended by Dr. Partridge during the absence of the lady's regular physician, and, upon the latter's return, passed under his care. The further history was that of a slow return of the power of locomotion.

Edward L. Partridge, M. D., *Secretary*.

NEW YORK OBSTETRICAL SOCIETY.

A stated meeting was held October 19, 1880, Dr. William T. Lusk, President, in the chair.

Dry Cold as an Antipyretic after Ovariotomy.—The President reported a case in which, on the day following an ovariotomy, the patient's temperature rose from 101° F. to 103·5°. Two enemata, each containing twenty grains of quinine, having failed to produce any reduction, and the patient having become somewhat delirious, an ice-bag was applied to her head. Sleep soon followed, and within an hour the temperature had fallen to 102°. The same measure served to control the temperature during the further progress of the case. This use of the ice-bag as an antipyretic had been suggested by his having observed such an effect from it in a case of intestinal hæmorrhage occurring during convalescence from typhoid fever. If it could really be relied upon to reduce the temperature, its advantages over the use of wet applications were obvious. Mr.

Spencer Wells and Mr. Knowsley Thornton, of London, were of the opinion that it was quite feasible to cool the whole mass of the blood by means of cold applications to the head, on account of the current of blood within the head passing so near the surface. ═══ Dr. Harrison had seen the temperature continue to rise, notwithstanding the use of ice-bags on the abdomen, in a case of peritonitis from an unknown cause. ═══ Dr. Hanks had made use of the measure in a case of typho-malarial fever, but, although the temperature was lowered somewhat, its action was not altogether satisfactory. ═══ Dr. Skene thought that, in the use of cold, whether dry or wet, along with its power as an antipyretic, we should not lose sight of its action as a cardiac depressant—failure of the heart's action being one of the dangers in inflammatory affections, especially peritonitis.

Inflammation of the Urethral Glands of Skene.*—Dr. Skene reported the case of a lady from whom, three years before, he had removed a vascular tumor of the urethra. She was much relieved for the space of a year, although the tenderness did not wholly disappear. Then it began to increase, and became so extreme that the slightest touch was exceedingly painful, and coitus had to be given up. The case might be reckoned as coming under the head of one of the forms of vaginismus. The growth had not reappeared, but at each side of the introitus vaginæ there was a red streak, with exquisite tenderness—evidently caused by a discharge from the ducts of a pair of glands that he had described in the "American Journal of Obstetrics" for April, 1880. He now laid these ducts open, from within outward, to the extent of five eighths of an inch, and packed them with cotton soaked in a dilute solution of subsulphate of iron, to prevent union. The symptoms soon disappeared, and the cut edges healed without closure of the ducts. He was convinced that the growth of the tumor was connected with the inflammation of these ducts, and that such inflammation was at the bottom of many cases of vaginismus and hyperæsthesia. Where this was the case, a cure might readily be effected by slitting up the ducts.

Dystocia from Hydrocephalus.—Dr. Mundé related a case of labor that had occurred in his service at the Maternity Hospital, in which the house physician, having failed in an attempt to extract with the forceps, had diagnosticated hydrocephalus. Dr. Mundé could feel the head by external palpation, rising to a distance of several inches above the symphysis pubis. It had not engaged, although there was no narrowing of the brim. A wide space was detected between the parietal bones, but fluctuation was not made out. Coinciding in the diagnosis of hydrocephalus, but not feeling perfectly sure, Dr. Mundé made another application of the forceps. The blades slipped off, however, without causing the head to engage. Three pints of serous fluid were then removed from the head by means of a trocar and cannula. As the fœtal heart was still beating, the forceps was again applied to the collapsed head, but in vain. The skull was then opened with a trephine, and extraction was easily accomplished with Braun's cranioclast, although the child was very large. The mother died of septic endometritis on the seventh day. ═══ Dr. Gillette thought that ordinary digital examination was wholly inadequate to the diagnosis of hydrocephalus. The whole hand should be introduced into the vagina, so that all the sutures could be felt. ═══ Dr. Mundé thought that in nine tenths of the cases external palpation, with one finger in the vagina, would answer every purpose.

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* Dr. Skene modestly asks us to state that the designation of these glands by his name is our act, and not his.—Ed. N. Y. M. J.

A STATED meeting was held November2, 1880, Dr. JAMES B. HUNTER, President, in the chair.

CELLULOID-COATED PESSARIES.—Dr. CHAMBERLAIN showed some specimens of a form of pessary that he had devised. Each pessary consisted of a ring of copper wire coated with celluloid. The celluloid was of a flexible sort, so that the ring could be bent into any shape that might be required, and would retain that shape, while, he thought, the bearing surfaces were so elastic as to lessen the risk of the abrasion and absorption that were apt to follow the use of hard-rubber instruments. The material was non-absorbent and highly polished, and was not affected by the vaginal secretions.

OVARIAN CYST TREATED BY INCISION AND DRAINAGE.—Dr. NOEGGERATH showed a specimen consisting of an ovarian cyst, together with the bladder and some other of the adjacent parts. The case presented two features of special interest—its development, to a great extent, within the broad ligament; and the fact that, early in its growth, the bladder had become adherent to it, and had been so much pulled upward, as the tumor ascended, that it was wounded in the operation. The speaker knew of but one other instance in which this accident had happened in ovariotomy—in a case of Dr. Le Roy McLean's, of Troy. The patient first noticed the growth six years ago. Dr. Noeggerath first saw her in October, 1880, and diagnosticated a large ovarian tumor, with a smaller tumor attached to it, the latter being situated in the right hypochondrium. As the result of a tapping, the whole mass had descended, so that the inference was drawn that there were no extensive adhesions. At the operation, intended to be that of ovariotomy, a layer of condensed cellular tissue was encountered between the cyst and the abdominal wall. As this made it difficult to finish the incision methodically, a trocar was thrust through it into the tumor, and a pailful of colloid material, with considerable fatty matter, was drawn off. The cannula was left *in sitû* as a guide, and, after a careful use of the knife, the wall of the cyst was incised. It was found that, in prolonging the incision downward, an opening had been made into the bladder, which organ extended up to within two inches and a half of the umbilicus. It had been held there by adhesion to the abdominal wall. In such a state of things, incision of the bladder was unavoidable, unless a catheter were introduced and its point carried as far upward as possible before making the incision. Catgut sutures were applied to the wound in the bladder, and it united by first intention. The peritonæum was found very much thickened and intimately adherent to the tumor. At this juncture the patient was observed to be in a state of collapse, and the cavity of the cyst was found filled with clots. After prolonged search for the bleeding vessel, it was ascertained that the hæmorrhage proceeded from a soft mass, about half as large as a kidney, situated in a pouch formed by the cyst. It was this mass that constituted the lesser tumor, and perhaps it had been wounded with the trocar, or perhaps it had become passively hyperæmic from the sudden emptying of the cyst. The patient's condition seemed to forbid the tedious work of breaking down the adhesions, and it was decided to adopt the drainage treatment. The peritoneal cavity was not opened at all, and therefore the wound of the bladder was no more dangerous than that made in supra-pubic lithotomy. A number of drainage tubes were inserted into the cyst, and an antiseptic dressing was applied. The patient rallied at first, but not thoroughly, and died the next day of acute anæmia with septicæmia. At the autopsy, it was found that the tumor had no pedicle, but was included in the broad ligament, so that its lower portion would have had to be left behind in any event. It was, however, not what was generally understood by the term "cyst of the broad ligament," which latter sort of tumors never sprang from the ovary itself, but always from the parovarium. It would be better to call them parovarian tumors, and to understand as tumors of the broad ligament those that, like the one in question, had accidentally grown in that direction, but started from the ovary.

Traumatic Cervico-vaginal Fistula.—Dr. Gillette mentioned the case of a woman who, when three months gone in pregnancy, produced abortion by inserting a straightened hair-pin into the uterus, employing the finger as a guide. Lying on her back, she thrust the needle into the uterine canal, as she supposed Considerable pain and hæmorrhage occurred at once. She had no medical attendance during the abortion that followed, but some months afterward, the woman having desired treatment for sterility, her physician, Dr. Lockwood, discovered the injury, and referred her to Dr. Gillette. A fistulous opening traversing the posterior wall of the cervix, large enough to admit the little finger, was plainly seen. He inferred that the hair-pin had lacerated the cervical wall, and that ulceration in the tract of the puncture had given rise to the loss of tissue. He closed the fistula in the ordinary manner, but felt doubtful as to its having had any influence in causing sterility. ═══ Dr. Watts had seen such a fistula; but it turned out to be the channel through which a fœtus must have passed, as the os externum was virginal. ═══ The President thought that, if such a fistula would not cause sterility, it might at least so impair the retentive power of the cervix as to favor abortion.

Reports on the Progress of Medicine.

QUARTERLY REPORT ON OBSTETRICS AND GYNÆCOLOGY.

No. IV.

By FRANK P. FOSTER, M. D.,

PHYSICIAN FOR DISEASES OF WOMEN TO THE OUT-PATIENT DEPARTMENT OF THE NEW YORK HOSPITAL.

Obstetrics.

1. Allen, J. E.—The uses of tar-water in obstetrical and gynæcological practice. "Atlanta Med. and Surg. Jour.," Oct., 1880.
2. Carstens, J. H.—A positive sign of pregnancy during the first three months. "Detroit Lancet," Sept., 1880.
3. Bennet, H. — Hæmorrhage and sickness during pregnancy. [Brit. Med. Assoc.] "Brit. Med. Jour.," Sept. 4, 1880.
4. Wilson, H. P. C.—A case of combined intra-uterine and abdominal twin pregnancy; the first child born naturally at eight months; the second delivered alive at term by laparotomy. "Am. Jour. of Obstet.," Oct., 1880.
5. Oppenheimer, L. S.—Puerperal epilepsy and protracted gestation. "Am. Pract.," Oct., 1880.

6. Van Peyma, P. W.—Induction of labor in protracted pregnancy. "Buffalo Med. and Surg. Jour.," Oct., 1880.

7. Breus, C.—Ueber das Myxoma fibrosum der Plazenta. "Wien. med. Woch.," Oct. 2, 1880.

8. Tison.—Considérations pratiques à propos d'un cas d'hydramnios. "Concours Méd.," Sept. 11, 1880.

. Lusk, W. T.—On the management of the second stage of natural labor. "N. Y. Med. Jour.," Dec., 1880.

10. Stephenson, W.—On the movements of the fœtal head in its passage through a contracted brim. "Obstet. Jour. of Gr. Brit. and Ire.," Sept., 1880.

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3. In connection with *hæmorrhage and nausea during pregnancy*, as well as a tendency to abortion and to numerous puerperal complications, Dr. Bennet wished to call attention anew to the importance of chronic inflammation of the cervix uteri as a very frequent cause of these accidents, and to the fact that the inflammation should receive surgical treatment. In the discussion, Dr. Graily Hewitt attributed these occurrences, especially the vomiting of pregnancy, to distortions of the uterus; and it was by virtue of straightening flexions, he thought, that the dilatation treatment was so successful in stopping the vomiting. He was inclined to agree with those who thought that the term inflammation might as well be banished from gynæcology. To this, Dr. Bennet replied very forcibly that books inculcating this doctrine were incomplete, and that those who bought them would have to supplement them with others. The laws of general pathology held good in this department of practice, and whoever studied them in general had only to apply them in particular.

8. This case of *hydramnios* is of interest on account of having been mistaken by an eminent surgeon for one of ovarian cyst, and also from the fact that the fœtus perished at once after its birth, and was found to be the subject of a cranial defect to which Parrot has given the name of *achondroplasia*—an arrest of bony development, due to sterility of the cartilage. A fœtus of this sort seldom survives, as there is generally more or less hydrocephalus, although, the author tells us, Broca once showed a man forty-two years old who was the subject of this defect. It is said to have nothing to do with rickets. The author raises the question of its connection with hydramnios.

14. Professor Simpson gives a case of *dystocia from sacro-coccygeal anchylosis*, and briefly reviews the literature of the subject. He thinks the state of the bones is best observed by examining per rectum. Moreover, when the wave of contraction is beginning to subside, the finger can very definitely pass on to either side of the coccyx and recognize the degree of indentation its rigid extremity is making on the cranial bones. The natural efforts may overcome the difficulty, or the union may be broken up by the accoucheur; but sometimes the forceps must be used, and then the anchylosis gives way, or else the head becomes so molded as to pass.

20, 21. Dohrn thinks that *expression of the placenta* is now generally effected more judiciously and safely than it was a few years ago, when Credé's original procedure was followed strictly. There is still room for improvement, he says, in our management of the placenta.

Nature should be allowed a little more play. With Schultze, he maintains that the separation of the placenta and decidua is accomplished naturally to a very great extent by an oozing of blood between these structures and the uterine wall. In this way the separation is accomplished gently and gradually, and in the porous layer of the decidua, so that the membranes are less likely to be torn and portions of them left behind. Expression should not be performed until a considerable part of the placenta protrudes through the os uteri. He alludes to bad results attributable to hasty expression, and intimates that they happen only in the practice of those who adhere to Credé's original method. ═══ Credé defends the practice of immediate expression of the placenta (as originally published by himself in the "Monatsschr. f. Geburtsk.," xvii, 4, 1861) against Dohrn's criticisms. In his long experience, he has never known of such results as are alluded to by Dohrn; and, while he admits that the process described by Schultze sometimes occurs, he denies that it is the physiological method. The accumulation of blood behind the placenta should be prevented to the utmost, and there is no better means of so doing than immediate expression. His method, he justly says, can not fairly be charged with bad results, unless the manipulation is strictly in accordance with his own directions, of which he will approve of no variation.

24. To arrest *post-partum hæmorrhage*, Baelz proposes, as at least of temporary efficiency and applicable in the absence of the means required in other methods, to tampon the vagina with one fist, clasping the labia around the wrist with the other hand, so that no blood can escape. At the same time an assistant makes pressure upon the uterus. He gives a case in which he resorted to this device with success, but, inasmuch as in this instance the nurse rubbed and kneaded the uterus, it is not easy to say which of the two manipulations actually stopped the bleeding.

29. Under the name of *erythema uterinum* Kidd describes a cutaneous manifestation that he thinks has occurred in at least three per cent. of his midwifery cases, and that he has also seen after trivial operations upon the non-gravid uterus. In a typical case, the nurse may call attention to an eruption like that of scarlet fever, and it will be found in broad patches over the abdomen, which it covers in the course of a few hours. Its appearance can not be distinguished from that of a mild scarlatina. The next day the axillæ will show a like eruption, but perhaps paler. This will extend downward over the chest to the abdomen, and upward over the neck, but will not affect the face beyond deepening its natural color. It will creep down the arms, and in many cases affect the hands, on the backs of which it will have a duskier shade than elsewhere. At the same time it extends down the thighs and legs, and covers the back, always advancing in broad patches. There are no other symptoms. The eruption begins to disappear about the end of the second or the beginning of the third day. The parts last affected begin to grow pale, and it soon disappears entirely, except from the abdomen, where it will remain in patches, it may be, for five or six days. There is no desquamation, renal affection, or œdema, nor is convalescence in any way retarded. Variations occur in the distribution of the rash, and sometimes there are minute vesicles rather sparsely scattered over the reddened surface. The eruption is of interest clinically from its resemblance to those of scarlet fever and the erythematous stage of small-pox, but the diagnosis is easy from the entire absence of fever.

32, 33. Dr. Segur's paper on the *prevention of puerperal convulsions* seems to have been specially designed to set before the Medical Society of the County of Kings a statement of the leading points upon which opinions differ, so arranged as to facilitate a satisfactory debate. Not only was it very successful from that point of view, but in itself it is a valuable contribution, not so much to our positive knowledge of the subject as to the methods that should be followed in its study. The author thinks that in almost all cases puerperal convulsions are a symptom of insufficient action of the kidneys, whether from acute Bright's disease or from mere functional disturbance—that the convulsions are simply part of a uræmic train of symptoms. He regards uræmia, more or less pronounced, as of more common occurrence than is generally supposed, and as sometimes the first noticeable symptom of a renal affection. A pregnant woman should be closely watched with reference to the function of the kidneys. —— In the discussion, Dr. C. Jewett was inclined to believe that non-uræmic cases were rare. Reflex irritation was probably not one of the prominent factors, as so many cases occurred before the beginning of labor or after its completion. —— Dr. W. H. Martin divided the cases into two classes: those occurring some time before the completion of gestation, and those occurring at full term. Whenever, in cases of the first class, the very first indication of trouble was a convulsion or unmistakable signs of its imminence, no attempt should be made to induce labor until general remedies had been actively and persistently employed, and, even then, interference would be more in behalf of the child than of the mother. If the symptoms did yield to treatment, and yet after some days the intelligence remained clouded, and especially if the urine was scanty and highly albuminous, evacuation of the uterus afforded the only hope of saving the woman's life. Moreover, whenever albuminuria had been recognized early, and careful and thorough treatment had been followed by only partial success, labor should be induced at an early period. When, however, all the symptoms improved, and the child was still alive, gestation should not be interfered with. In convulsions, actual or threatened, at full term, the indications for interference were as follows: 1. Whenever threatening symptoms appeared in a case that had been observed and treated, means should be taken at once to hasten delivery; 2. Whenever, as would happen in most instances, the immediate forerunners of a convulsion were the first-observed evidence of mischief, general remedies should be used actively before even examining the state of the uterus. If these measures were effective, in all probability labor would begin, and the rapidity of its progress should decide the question of interference. 3. If the general condition improved, and no natural efforts at delivery occurred, there should be no interference so long as the condition remained good. 4. If, in spite of treatment, the symptoms grew more threatening, if convulsions occurred and continued, delivery must be effected as rapidly as was consistent with the safety of the mother and child. 5. If convulsions had occurred, and labor had begun, there should be no unnecessary delay in any case. —— Dr. F. H. Stuart spoke of the frequency with which women escaped convulsions, even when they had shown signs that were commonly looked upon as premonitory; and hinted that frequent examinations of the urine, and other manifestations of solicitude, might favor the occurrence of convulsions by exalting the nervous susceptibility. —— Dr. A. J. C. Skene's experience had led him to believe that the affection was most likely to happen in women of a peculiar constitutional condition, approaching the chlorotic state. In such women the heart and blood-vessels were small, and the respiratory apparatus comparatively small, as compared with the other organs. Moreover, the mere fact of pregnancy heightened the excitability of the nervous system. These conditions predisposed to functional derangement of the kidneys. Uræmia was the most important, if not the only, exciting cause of the convulsions. The freedom of the urine from albumen before and during the convulsions was no proof that the kidneys were acting normally. There might still be a defective excretion of urea, and a moderate degree of uræmia might produce convulsions in a patient whose nervous system was modified by pregnancy. The diet should be restricted in the matter of nitrogenous food during pregnancy. The emunctories should be kept actively at work, particularly the liver. Exercise and rest, systematically followed, would relieve the renal circulation better than any known remedy. Where there was manifest nervous derangement (irritability, capriciousness, sleeplessness, and the like), sedatives should be used, especially the bromides. If these did not answer, he used belladonna. He had seen benefit from massage. —— Dr. A. Hutchins did not believe in the existence of non-uræmic puerperal convulsions, nor [if we correctly interpret the printed report] did he believe that the uræmia necessary for the production of convulsions ever became developed so rapidly that the physician could conscientiously say that no sort of investigation would have enabled him to foresee the danger and guard against it. To be sure, there might have been no subjective [the report says "objective"] symptoms, but there might have been defective renal action nevertheless. He was not aware of a single case on record in which convulsions had occurred after sufficient investigation all through the pregnancy had shown the entire absence of any reason to suspect that the kidneys were acting imperfectly. One such case would show that there was such a thing as "the unannounced puerperal convulsion." Against such a convulsion there was no known prophylaxis.

35. Duncan applies the term "*renal epilepsy*" to epileptiform convulsions due to sudden congestion of the kidneys. He objects to the consideration of puerperal convulsions as a separate entity, but would make the term cover all epileptiform attacks during pregnancy and the lying-in period. He quotes Bourneville to the effect that a diagnosis may be made between uræmic and other convulsions by noting the temperature, which is below the normal in the former; and gives a case, manifestly uræmic, in which the temperature rose to 102° and 103° F. during the convulsive period.

37. For the *prevention of puerperal diseases* Benoist attributes great efficiency to the application of collodion over the abdomen to overcome inflammatory affections, the use of ergot against putrid infection, and the administration of large doses of quinine against "pernicious accidents."

41. After deploring the lack of precision in the term *puerperal fever* (which should not be limited to septicæmia and pyæmia, but should include all the ordinary puerperal diseases that are accompanied by fever and that may prove fatal), Professor Duncan remarks that much mystery and positive error are due to the habit of regarding the disease as occurring chiefly in epidemics. Although its prevalence shows a seasonal variation, no periods of epidemic raging have been demonstrated. It is also erroneous to estimate its importance solely by its mortality, for mere escape from death does not imply a return to health, but sometimes wrecked health and perhaps grave and progressive disease. The speaker then sketches the rise and fall of the different theories of pathology, and the various plans of treatment that have held sway in the past, and avers that we have yet a long course to follow in acquiring knowledge regarding the disease before we can hope for a well-established method of treatment. In some cases there seems to be a temporary inflammatory diathesis, so that not only may the region of the uterus be attacked, but also the kidneys, the thoracic organs, or the encephalon, or all these at once. Sometimes the pelvic contents escape the affection; most frequently, however, there is parametritis or perimetritis. In such cases a moderate antiphlogistic plan of treatment is generally very beneficial. As many as a dozen leeches, applied above the groins, generally cause marked relief of pain and some improvement of the general condition. In the later days of the fever a large fly-blister is of great value. It should be of the old-fashioned sort, so as to produce great irritation and a copious effusion of serum. Opium may be used freely, when it does not disagree, as a stimulant narcotic, but it is not well to rely upon its copious administration, regardless of the peculiarities of the case. Where, in severe cases, there is much local peritonitic tenderness, a mercurial may advantageously be combined with the opium, to the extent of six grains of blue pill in the course of the day. Many delicate women do best under a moderate use of opium and stimulants, with the local use of poultices. Sapræmia (poisoning not by an organism multiplying in the blood, but by the chemical products of putrid decomposition passing into it) demands that a stop be put to the supply of putrid material, and it is in cases of this sort that the leading indication is to remove putrid matters from the genital passages and to keep those passages sweet by means of disinfectants, which plan of treatment often achieves prompt and brilliant results. Mere vaginal washing may suffice, or intra-uterine washing, or the volsella may be passed into the uterus to grope for the decomposing structure, or with the same view a finger or fingers may be passed, or even the whole hand; and we may need to dilate the cervix beforehand. For intra-uterine injections the author always uses a carbolic-acid solution (1 to 40, or occasionally 1 to 30). A drachm of fluid extract of ergot should be given daily, in divided doses, for a few days, to induce permanent uterine contraction. The pyæmic cases, with their embolism, inflammation, and abscess, are more dangerous than the septicæmic, but even from pyæmia there are many recoveries. The two are often combined, and their treatment is identical, except as regards the surgical interference sometimes required in pyæmia. There is no antidotal or curative treatment—they are to be managed rather than treated. Good nursing, careful feeding, and prudent stimulation are the great points. Milk and beef-tea being the staple articles of diet, with variations to meet minor emergencies, as much should be given as the patient can take without evident disorder. Good brandy and champagne are the preferable stimulants, but they should be used as little as possible—often none is needed, at least for a time. Occasionally, in rare crises of weakness, brandy must be given largely. Iron and quinine are given with great advantage. The temperature does not long remain high, but varies greatly and often rapidly. Large doses of quinine or salicine generally suffice to keep it moderate, with tepid sponging and regulation of the heat of the room and of the bedclothes. Toast-water is better than ice to relieve thirst. To arrest vomiting the hydrocyanic-acid-and-bismuth mixture is best, with or without morphia. Charcoal, in tea-spoonful doses, or turpentine, in ten-drop doses, are most useful for flatulent distention. Poultices to the hypogastrium relieve pain and promote the lochial flow, besides conducing to the free action of the skin. Opium is almost always of advantage, short of narcotism, but we should not be too ready to resort to it to control diarrhœa, which may be salutary.

47. Professor Simpson reviews the subject of *injuries inflicted by the accoucheur upon the bones of the child's lower limbs*, and thinks that such occurrences often take place in cases of version and extraction, although they are commonly overlooked from the fact that, the children being often born dead, no thorough examination is made. He refers to Ruge and Küstner's essays upon the subject. The injury is generally a diastasis. A sort of "chuck" (sound or sensation, he can not tell which) may be felt by the operator at the time the accident occurs. Whenever traction has been made upon a limb, the limb should be examined carefully. When there is complete separation, attended by laceration of the periosteum all around, the hiatus may easily be traced, and there may be crepitation. In simple loosening of the epiphysis, the diagnosis will be more difficult, as crepitation may not be perceptible. Dislocation may be excluded, however, if Hofmokl is correct in averring that attempts to produce it on the fœtal cadaver always fail, epiphyseal separations occurring instead. When the periosteum has been torn, a bandage will be needed to keep the separated portions in apposition. However, the rarity of lameness after version and extraction is worthy of note.

48. Mr. Coffin's case does not seem to have been one of *asphyxia neonatorum* in the usual meaning of the term, for the child was not born asphyxiated, but became so by being allowed [*sic*] to turn upon its face, "though there were two married women in the room." When Mr. Coffin arrived, the child had been born nearly an hour. There was a slight flutter at the heart, which ceased in a few minutes. The child was partially wrapped in flannel and placed before a fire, and the author practiced Silvester's method of resuscitation. After a little more than an hour, the child gave a catching kind of sob, and breathed perfectly at the end of two hours and twenty minutes.

49. Sänger argues against the necessity and the practicability of a primary *antiseptic dressing for the umbilical cord*, recently proposed by Dohrn. The funis naturally withers by a process of dry gangrene, and, even when putrefaction takes place, septic infection seldom or never follows. Dry applications are to be preferred, especially the salicylized starch powder recommended by Fehling. To prevent the funis from imbibing moisture when the child is bathed, it is sufficient to cover it with Seabury & Johnson's "rubber adhesive plaster." The author has known but one child to become infected with the puerperal-fever poison by way of the navel, among ten that died of sepsis during an endemic of puerperal fever.

GYNÆCOLOGY.

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6. M. Labbé thinks that true *elephantiasis of the vulva* is of less common occurrence than the books would lead us to suppose, as he has very rarely observed it. He relates a case in which the tumor was of very rapid growth, and was removed by means of Paqnelin's cautery without the loss of a drop of blood. It was only as large as a hen's egg, and sprang from the left labium minus. The præputium clitoridis was much hypertrophied, and the clitoris itself was lost in a hypertrophic mass situated above the tumor. The patient had lost her sexual sensibility, but stated that it returned to a very feeble extent at each menstrual epoch.

9. Dr. Fieber's article deals with the *use of electricity in gynæcology.*

11. Dr. Gervis thought that *flexions of the uterus* were of importance chiefly in proportion as they gave rise to stenosis of the canal at the bend, and recommended dilatation with bougies. ═══ Dr. Herman had treated fifty-six cases of dysmenorrhœa by rapid dilatation, including at first all cases in which he had been able to find any structural cause for the menstrual pain; latterly he had been able to make a more careful selection of the cases in which this treatment would do good. Of the fifty-six cases, in twenty-seven there was no benefit; in five the effect was uncertain (other treatment having been employed at the same time); in five the result was not ascertained; in one the pain was quite changed in character; in fifteen complete relief followed, lasting in some cases for many months—in two, as long as twenty months to his knowledge. ═══ Dr. Bantock is reported to have made the unintelligible statement that, "in a true case of flexion, all intra-uterine stems must be used, whether it were anteflexion or retroflexion." ═══ Dr. Marion Sims had given up stem pessaries in treating anteflexion, and now used a globe pessary just large enough to fill up the anterior cul-de-sac, and very carefully fitted. He objected to Simpson's sound in the treatment of retroflexion, but thought the fundus must be thrown up by some kind of elevator. He now always used block tin or some other malleable material for pessaries, bent to suit the peculiarities of each case.

19. In a note on *erosion of the cervix uteri in chronic metritis*, M. de Sinéty remarks that lesions of this ulcerative appearance, formerly regarded as a disease, are but one of the many manifestations of the actual disease. Histological examination of a number of cervices removed from living women has convinced him that the alteration begins beneath the epithelial layers, while the latter are still normal, by an infiltration of embryonal elements, an anatomical fact that has before been observed in inflammation of other mucous membranes. Thus we may explain why it is that these pseudo-ulcerations of the vaginal portion of the cervix, which accompany metritis, are often so little benefited by applications of mild caustics, such as nitrate of silver, while they disappear, together with the affection of which they are a symptom, under the influence of local depletion, chiefly by scarification, without the application of any drug. The source of error lay in the fact that, until the present time, histologists had only post-mortem specimens at their disposal.

22. Dr. A. Martin regarded erosion as altogether the best way of treating *endometritis corporis*. After using the curette, he injected a solution of chloride of iron. Preliminary dilatation of the cervix was unnecessary. In the discussion, Neugebauer and von Grünewald alluded to the difficulty of being certain as to just what part of the endometrium one was scraping, especially at the sides of the organ and about the mouths of the Fallopian tubes. Schröder's experience with the method had been favorable, but he thought relapses were no more prevented by it than by the treatment previously in use. Martin remarked that the movements of the curette could best be appreciated by the hand on the abdomen.

23. This discussion turned chiefly upon the *treatment of metrorrhagia*. Dr. Atthill enumerated the most common causes of uterine hæmorrhage, apart from actual pregnancy, as: 1, Cancer; 2. Tumors of the uterus; 3. Imperfect involution; 4. Granular erosion of the cervix; 5. A granular condition of the intra-uterine surface; 6. Retention of a portion of the ovum after abortion. He thought well of the hæmostatic action of Chian turpentine in some cases of cancer, although he could not fully agree with Mr. Clay as to its curative power. It seemed to act best in epithelioma of the cervix. The value of turpentine in uterine cancer appeared to lie chiefly in its diminishing the blood supply. The small supply of Chian turpentine, and the difficulty of obtaining it pure, were serious drawbacks. He believed that a pure oil of turpentine, in ten- to twenty-drop doses three or four times a day, was quite as good as a hæmostatic. In cases of hæmorrhage due to fibrous tumors, intra-uterine injections of liquor ferri perchloridi, or of tincture of iodine, were sometimes satisfactory, although not absolutely safe. The injection of hot water (at about 110° F.) was far safer. Incision of the cervix often caused diminution of the hæmorrhage and relief from pain, and facilitated the free return of the hot water injected. Chapman's spinal hot-water bags were often effectual. No drug was equal to ergot, which was most effective hypodermically. In cases of subinvolution, there was generally also an unhealthy state of the endometrium, which must be treated by intra-uterine medication. In these cases ergot, quinine, and strychnine acted as indirect hæmostatics. In the chronic form, he had given Chian turpentine with benefit. Hæmorrhage from granular erosion might be arrested by the direct application of almost any astringent; but, to prevent its recurrence, the lesion must be cured by the free use of some strong caustic. In cases of retention of a portion of an ovum, the removal of the latter with a curette, after dilating the uterus, was liable to cause cellulitis and even peritonitis; in such cases, therefore, syringing the uterus with hot water was strongly recommended, at least as a preliminary measure. He had no faith in astringents given by the mouth in cases of hæmorrhage from any of the causes enumerated. ═══ Dr. Routh had had good results with Chian turpentine at first: it checked hæmorrhage, relieved pain beyond all expectation, and produced the copious glutinous secretion described by Mr. Clay; but it now failed altogether, probably from its being adulterated. What was now supplied looked like Canada balsam; what he had seen of old was a resinous-looking substance. He had used ergotin (gr. v to ʒj of water), and extractum liquidum ergotæ (f ʒ ss–j), injected into the gluteus muscle. It was not always sure, and he had seen abscess from it, and in one case death, with symptoms not unlike those of septicæmia. The intra-uterine injection of iron was safe, if free outflow of the liquid were secured by previous dilatation with a tent. He believed it next to impossible to inject up the Fallopian tubes, except in rare cases of dilatation from retained menses. He had found hot water very efficacious, but it should be very hot, as hot as the patient could bear. Possibly it acted by coagulating the albumen of the blood in the small vessels. [!] ═══ Dr. Lawrence had observed two cases of cancer of the uterus in which Chian turpentine checked the hæmorrhage. ═══ Dr. Hewitt had found *vaginal* injections of quite hot water very efficacious in menorrhagia, particularly when due to fibroids. ═══ Dr. Gervis had found Chian turpentine decidedly beneficial as a styptic in a series of cases, but it had no effect on the pain, and generally caused nausea. In a case of purpuric hæmorrhage, where even injection of perchloride of iron had failed, the bleeding was checked with the cervical tampon. ═══ Dr. Grigg had had no success with Chian turpentine in cases of cancer. ═══ Dr. Macnaughton Jones had used Bonjean's ergotin successfully. He had met with abscess when he injected it subcutaneously, but not after injections into the gluteal muscles. He had now two marked cases of epithelioma of the cervix, in which pain had been relieved and hæmorrhage arrested by Chian turpentine; however, other means had been used. It did not appear to influence the progress of the disease. ═══ Dr. Herman had not seen any effect from Chian turpentine in cases of uterine cancer. He thought injections of perchloride of iron into the unimpregnated uterus through a double-channeled catheter were unsafe; a case had been published which showed that the fluid might pass along the Fallopian tube. It was better to inject through a hollow probe a small quantity only. ═══ Dr. Henry Bennet called attention to the practice of tamponing the cervical canal with pledgets of cotton-wool, each attached to a thread hanging from the vulva. They should be pulled out in twenty-four hours, and others inserted if the hæmorrhage continued.

30. M. Tripier leads up to his *new topical treatment of uterine fibroids* by a review of the general subject of intra-uterine medication. In the matter of solutions, pastes, ointments, etc., he thinks the excipient is of importance. Watery solutions are too transitory in their action, those made with glycerine give rise to severe pain, and other objections attach to ointments. He has settled upon soap as the best excipient. He finds it quite manageable and remarkably tolerated by the uterine cavity. Almost any drug may be incorporated with it, including the alkaloids. [No hint is given that the soap may possibly destroy some of the alkaloids.] The mass is made into cylinders, which are inserted by means of a tube furnished with a piston. He has found iodide of potassium of great value in producing atrophy of the tumors. Where hæmorrhage is a prominent symptom, he has had good results with digitalis associated with the iodide, in the form of the saponaceous cylinders. It is safe to use the cylinders in out-patient practice; the patient sometimes needs to lie down for a few minutes, on account of temporary pain, but often there is none at all.

33. In the course of three years Veit met with twenty-one cases of *cancer of the body of the uterus*, and, together with Ruge, he has collected eighty recorded cases in addition. Of the latter, only twenty-three were considered satisfactory for the purpose of analysis. Veit considers that the affection is doubtless always an adeno-carcinoma. Various forms occur: if the neoplasm soon becomes disintegrated, layer upon layer, the cavity becomes enlarged, but the deposit itself is not thick; a small area may be the seat of the disease, furnishing a knob-like outgrowth; or the uterus may be highly distended by large lumps. In no case did the mucous membrane escape. The muscular layer, however, is not very prone to cancerous degeneration, and the peritonæum is seldom involved. Veit considers that the disease may be developed from an adenoma. The most important symptom is the intermitting, cramp-like pain. The microscope is necessary for a diagnosis.

34. In opening the discussion on the *removal of uterine tumors by laparotomy*, Mr. Wells insisted upon the importance of reuniting divided peritoneal edges with sutures; but, where the uterine cavity has been opened, he prefers not to close the wound of the endometrium, lest its closure cause accumulation of blood, etc., which might even break through into the peritoneal cavity. His success has been much greater since adopting the antiseptic method (three deaths in fifteen operations, against sixteen in forty-five). He prefers the intra-peritoneal treatment of the stump, and thinks it not unlikely that cauterization may become the favorite resource.═══Mr. Knowsley Thornton would limit the term *hysterectomy* to supra-vaginal amputation of the uterus. Such cases seemed to do best when Wells's clamp was used, and, strange to say, they did better than those of sessile or intramural fibroids. Subperitoneal fibroids more or less pediculated could be removed, with Listerism, with little or no danger. What was most needed was increased precision in diagnosis, as no operative interference should ever be undertaken in the graver cases until every other device had been resorted to without enabling the patient to live in tolerable comfort. Exploratory incisions, fortunately made safe by Listerism, not only cleared up individual cases, but were constantly adding to the stock of knowledge that would in the future perfect our means of diagnosis.——Dr. Marion Sims thought that Péan's method of removing the whole organ was safer than Schröder's procedure of cutting out a portion of it.——Mr. Wells thought further experience necessary before deciding as to the value of Battey's operation. It might be that there had been a number of unsuccessful cases that had not been published.

35. Schröder reported his experience in *extirpation of the uterus per vaginam.* He had now done the operation six times, and his assistant, Hofmeier, once. Of the seven patients, only one had died. Baum had operated four times, with two deaths, but he had not used the vaginal suture. [For the experience of some other German surgeons with this operation (under the name of Billroth's), see our last Quarterly Report on Obstetrics and Gynæcology, "N. Y. Med. Jour.," Oct., 1880, p. 418.]

38. Mr. Meredith gives a case of *extra-peritoneal cyst of the ovary*, operated upon by Mr. Thornton. He regards the feature of complete extra-peritoneal development as unique, having failed to find a like case on record.

QUARTERLY REPORT ON OPHTHALMOLOGY AND OTOLOGY.

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8. Parent takes up the much-discussed question of *retinal reflections.* He rejects Loring's explanation of the reflection from the vessels as being due to the subjacent parts, and gives his reasons for so doing. He also rejects the theory of the posterior wall of the vessel as influential in producing the reflex. He thinks the posterior wall of a vessel acts like a concave cylindrical mirror: the reflected rays following the meridian parallel to the axis might return to the eye of the observer if the absorbent power of the blood were less considerable; but the rays which fall upon the wall of the vessel perpendicular to its axis can not be reflected outside of this; hence these rays can not contribute to the formation of a reflex, for they are extinguished in the interior of the vessel, and absorbed by the column of blood. Parent's idea is, that the reflection from the vessels is caused by the column of blood itself, agreeing in this with Ed. von Jaeger, and he gives his reasons for this in detail. He also speaks of a general reflection from the surface of the retina, which is sometimes so intense as to interfere materially with an ophthalmoscopic examination. This he regards as due to the internal limiting membrane, which, especially in children, is really a vitreous membrane, and, like the latter, gives off a reflex resembling that from glass. The elliptical reflex from the macula, according to Parent, may be seen in adults as well as in children, is not at all uncommon, and, whenever visible with the inverted image, is also visible with the erect image; and in some cases it is plainly visible in the erect image when invisible in the indirect image. His views differ materially from those of all others who have written upon the subject, notably Loring and Klein.

9. *Keratoscopy* is an incorrect term for describing a method of determining the refraction of an eye by inspecting the cornea, for the form of the latter has little to do with the resulting phenomena. Forbes thinks it possible that the existence of emmetropia, myopia, hypermetropia, and astigmatism may be diagnosticated by simple inspection of the corneal reflex. This reflex, as also the movement of the light and shadow on the cornea when the mirror is turned on its axis, depends in low degrees of ametropia almost entirely on the distance of the observer from the observed eye. These appearances will vary according as a concave or a plane mirror is used. This method of inspection affords no means of distinguishing between axile ametropia and ametropia of curvature. In a myopic eye the *bright portion* ot the corneal crescent is situated at the periphery, on the side from which the light comes, and increases in extent in proportion to the degree of myopia. In a hypermetropic eye the *shadow* occupies this position, and diminishes in extent in proportion to the degree of hypermetropia present. In simple myopic astigmatism, the illuminated portion will assume the form of a crescent, or of a triangle with its apex toward the summit of the cornea, and will be large in proportion to the degree in which myopia is present. The movement of the shadow upon the astigmatic meridian corresponds to the movement of the mirror. In compound myopic astigmatism, in both meridians the shadow will move in the same direction as the mirror, but the illuminated portion of the pupil will be relatively larger in the more myopic meridian. In simple hypermetropic astigmatism, the shadow will, in both meridians, move in a direction contrary to the movements of the mirror. In the hypermetropic meridian, it will be well at the periphery and will be more pronounced in proportion to the amount of hypermetropia present. In compound hypermetropic astigmatism, the shadow will be smaller and deeper in that meridian in which the hypermetropia is the most marked.

16. Javal's paper on *progressive my-*

opia, though short, contains some points which arrest attention. He considers that the variations of accommodation for near work, occurring in myopes, are not the cause of myopia, but rather a cause of its increase, and that it is necessary to distinguish between the production of myopia and its increase. There are certain eyes which elongate when their accommodation is called into play, and these eyes, predisposed to myopia, must be spared every effort of this kind. So far from prescribing concave glasses for reading for persons with such eyes, we should give them convex glasses. If the myopia has reached one or two dioptrics, we must use glasses more or less strong, without ever going above three dioptrics. Instead of correcting the eye for infinity, we correct it for a distance of 25 to 33 cm., by convex glasses when the myopia is not above three dioptrics, by concave glasses when it is above four or five dioptrics.

24. Warlomont divides *nystagmus* into two great classes: 1. In non-amblyopic subjects; 2. In amblyopic subjects. Of the first class he makes two subdivisions: 1st, symptomatic nystagmus, dependent on some other affection, generally cerebral; 2d, muscular nystagmus, dependent upon a primary or consecutive affection of the motor muscles of the eye. Nystagmus may show itself in the course of material alterations of the central or peripheral nervous system, following an injury or spontaneously. The nystagmus which appears in non-traumatic affections of the nerve centers accompanies encephalic manifestations or is produced in the course of medullary affections. It is safe to conclude that the nystagmus which is accompanied by convulsions, or even by slow and progressive hemiplegia, is always an indication of a real encephalic lesion. In regard to the symptomatology of miners' nystagmus, it is not produced until the visual line is directed above the horizontal plane. This variety of nystagmus is defined as a myopathy of both elevators of the eyeball and of the internal rectus, intimately connected with anæmia and paralysis of accommodation. In the nystagmus of amblyopic patients, there exist either opacities of the media, especially of the cornea and lens, or diseases of the iris, choroid, or retina (such as retinitis pigmentosa and albinism), or lack of development of the eyeball (microphthalmus or atrophy). Warlomont thinks that by the methodical classification of nystagmus given in this paper the confusion which has hitherto prevailed as to its origin will disappear.

29. Chiralt's article on *lachrymal fistula, with or without dacryocystitis purulenta*, is a plea for the operation known as destruction of the lachrymal sack, and against the use of Bowman's probes, except in a limited number of cases. He says with some show of reason that no other method in use gives such a large proportion of cures. He claims that it cures almost certainly within a period varying from twelve to twenty-four days, and that in most cases there is no subsequent lachrymation. Many cases rebellious to all other methods are perfectly cured by this procedure. He uses as a cauterizing and destroying agent the acid nitrate of mercury, originally recommended by Cevera. He reserves probing, as recommended by Bowman, for cases of simple narrowing of the nasal duct.

31. In simple *lachrymation, with mucocele of the sack*, Landolt probes the canals with the conical sound, without incising them, and then injects a solution of borate of sodium (1 to 200). If it does not pass, he incises the upper canal and injects a solution of sulphate of sodium (1 to 150). In suppuration of the sack he divides both canals, upper and lower, and connects the two incisions, thus avoiding external incision into the sack.

37. *Scorbutic diseases of the eye* have received but little attention, mainly because they present little that is characteristic. Fialkowsky observed in scorbutic patients lesions of the lids, conjunctiva of the lids and eyeball, cornea, and episcleral tissue, and very rarely of the iris. The main lesion in all these tissues was a more or less extensive extravasation of blood. In most of the cases the conjunctiva was involved, the hæmorrhage being generally situated on the temporal side of the eyeball, and ending at the corneal margin in a chemotic border. The neighboring portion of cornea was slightly cloudy, the pupil was contracted and sluggish, the iris was hyperæmic and discolored. Hæmorrhage into the episcleral tissue was much less common, but when it occurred there was violent ciliary pain, and the ciliary region was extremely sensitive to pressure. In the lids the extravasation of blood was generally beneath the skin of the upper lid, and very rarely merely in the lower lid. The keratitis began independently in some cases, and in some it followed a conjunctival or episcleral hæmorrhage. It was always of the parenchymatous variety, and the cornea became of a dirty, grayish-green color, with points of a more saturated, almost white, infiltration. The conjunctiva may remain intact throughout in these cases. Occasionally hemeralopia was observed, either independently or in connection with conjunctivitis and keratitis. The fundus of the eye remains perfectly normal, but the patients complain not only of not seeing at night, but of defective vision by daylight. In all these cases the prognosis is good, the course of the disease extremely slow, and the treatment mainly to be directed to the scorbutic taint, with atropine and warm applications locally.

38. Wolfe's method of treating *ophthalmia neonatorum* in the early stages is to bathe the conjunctiva of the everted lids three times a day with a dessert-spoonful of a two-grain solution of borax mixed with two ounces of warm water. He also uses a four-grain solution of atropine. The eyes are kept clean by warm water, and bandaged after each application. When satisfied that the inflammation is really purulent, he everts the lids, cleanses the inflamed surface with dry lint, and applies an amalgam of argentic nitrate, 2 parts; and potassic nitrate, 1 part; using atropine as before. If the cornea is ulcerated, the mitigated stick must be used very energetically. The same treatment he advises for purulent conjunctivitis of adults. Wolfe never uses cold applications, but always warm fomentations.

46. Martin employs the *actual cautery* for all *corneal ulcers.* He thinks the iron at a red heat diminishes the intraocular tension, and in this lies its value as a therapeutic agent. He makes one or two applications, according to the size of the ulcer, and does not hesitate to perforate if there is any tendency to necrosis.

48. Wicherkiewicz recommends the following *operative procedure for scleritis* in cases which have resisted the ordinary methods of treatment. The patient is laid upon the operating table, and the conjunctiva is divided freely over the scleral inflammation, so as completely to expose the diseased part. It is better to make this conjunctival incision parallel to the corneal margin. He then takes a small, sharp spoon, made for the purpose by Lüer, and scratches and scoops out the soft, spongy, very vascular, infiltrated tissue of the sclera, until he reaches healthy scleral tissue. A crater-like excavation is thus formed. Iced compresses are then applied for an hour, and then an antiseptic bandage is put on over the one eye. This bandage is reapplied daily, and, if any muco-purulent secretion appears, some astringent wash, like a solution of zinc or alum, is used. He has seen cases of a most obstinate nature cured in two weeks by this method of treatment.

51. Lawson's paper on *sympathetic ophthalmia* is a very practical one. He calls attention to one of the peculiarities of sympathetic inflammation, viz.: its tendency to recur, as do also all forms of iritis. This is true also of sympathetic irritation, which may entirely subside, only to recur and drift into well-marked sympathetic ophthalmia. He recognizes the fact that the removal of the injured eye, when sympathetic inflammation is established in the other eye, will not arrest the disease, though it may arrest sympathetic irritation. If sympathetic inflammation is once established, he thinks the injured eye should not be removed if it retains any sight. He regards operative interference with the inflamed eye as positively prejudicial in the early stages of sympathetic inflammation. In the later stages, when the pupil is closed and false membrane fills the pupillary space, he thinks no operation should be done until the eye is absolutely quiet. In the early stages, all light should be excluded from the eye, and treatment by mercurial inunction should be persisted in. In the second stage, when the eye is quiet, if the patient has sight enough to walk without assistance, no operation should be done. If sight is useless, an operation may be done, the great object being to get rid of the lens.

58. Brailey's *theory of glaucoma* starts out with the axiom that the amount of transudation varies with the blood pressure, which pressure is increased locally whenever any artery is dilated up to its origin from a larger trunk. This enlargement of the vessels is seen *within* the eye, and affects almost solely the blood-vessels of the ciliary region and iris. This enlargement is probably the consequence of an affection of the vaso-motor nerves. The existence of arterial dilatation may be due in some cases of glaucoma to irritation of the nerves of the ciliary body consequent on the extreme stretching of the fibers of the suspensory apparatus of the lens. Brailey infers that arterial enlargement, if not found at excision, has never existed; though he admits that, if the disease has not lasted long enough for atrophy of the arterial walls to have supervened, it may have existed and then afterward subsided. This might explain the phenomena of intermittent glaucoma, and the occasional cure of glaucoma by paracentesis alone. He believes that atrophy with sclerosis of the ciliary body and iris is always preceded by some inflammation, and when these are once established there will be an actual diminution of the fluids normally recruiting the vitreous and aqueous, unless an enlarged arterial supply exists. He recognizes the existence of an intraocular current, passing from the vitreous through the canal of Petit into the posterior chamber of the aqueous humor, then through the pupil into the anterior chamber, and thence out. A slightly increased pressure from vitreous to aqueous might carry the periphery of the iris forward and aid in blocking further exit through the ligamentum pectinatum. In cases of advanced and applied iris, he attributes the position of the iris to an increased flow of fluid toward Schlemm's canal from the ciliary body, due either to its inflammation or to the increased vascular supply. The valvular action of the iris is further facilitated by its atrophy. If the entrance to the canal of Schlemm is blocked by inflammation, as in iritis serosa, the pressure on the two sides of the iris will be equal, and it will have no tendency to advance, even though the tension be extreme. From the study of a group of cases he finds that, whenever the canal of Schlemm is blocked by the iris, this condition is accompanied either by perforated corneal ulcer, or by an acute inflammation of the ciliary body with little or no atrophy, or more commonly by an extreme atrophy of the same, with or without sclerosis. It is thus clear that obstruction at the canal of Schlemm is sufficient to maintain a glaucomatous condition, and even to originate one, provided the iris has been brought into the required position.

59. Smith again takes up the further investigation of the *pathology of glaucoma*, and adduces some new facts confirmatory of certain points involved in his theory of the disease, heretofore published. Examinations of a second series of eyes have convinced him that the diameter of the lens increases with age; that its whole bulk is increased with the advance of life. Furthermore, he found in glaucomatous eyes, after excision, that the circumlental space was sometimes widely open; but that there was usually evidence to show that it had previously been abnormally narrow. He also convinced himself that, as the diameter of the lens increased, the distance which separated it from the ciliary processes decreased; and that the circumlental space diminished with age. Finally, he concludes that there is at present no sufficient evidence to show whether the abnormality of the glaucomatous eye is primarily in the lens or in the ciliary processes.

60. Smith regards the fundamental and essential cause of *primary glaucoma* to be an insufficiency of space between the ciliary processes and the lens. All conditions which tended to promote venous turgescence, arterial hyperæmia, or increased secretion within the eye, might become exciting causes of glaucoma, provided this abnormality were present. He also suggests that the starting point of glaucoma is some condition which raises the vitreous pressure slightly above the aqueous pressure. Narrowing of the circumlental space would tend to raise the vitreous pressure, and circumstantial evidence favors the idea that narrowing of this space is actually the starting point of primary glaucoma.

61. The question of the influence of *quinine in glaucoma* is again brought forward by Adamük, who cites a case, occurring in the practice of Iwanoff, of a lady who for nearly three years kept the premonitory symptoms of glaucoma in abeyance by small doses of quinine, never amounting to more than twelve grains in the day. Finally, however, the glaucoma became actually fulminating, and an immediate iridectomy became necessary.

63. Dor communicates the *psychic results of a double operation for congenital cataract.* The patient was seven years old, the child of a man who had acquired cataract at the age of twenty-five years. Six days after the operation upon one eye the vision was tested, and the child was found to have no notion of distance, and could only distinguish three objects which it carried about with it. One year later the second eye was operated upon, and five days afterward this eye saw, judged, and distinguished as well as the first eye. This illustrates the influence of cerebral education upon the visual sense.

64. In this article Galezowski considers the subject of *diabetic cataract.* He thinks that in these cases the blood must be saturated with sugar, and hence all the tissues and liquids of the organism contain a greater or less quantity of sugar. The liquids of the eye are saturated with glucose, which causes more or less interference with the nutrition of the lens. He thinks diabetic cataracts are of two sorts: some are the result of too much glucose in the blood and urine, and these are glycosuric cataracts by saturation; others are the result of a simple coincidence. The origin of the cataract is traceable directly to the faulty composition of the aqueous humor. Glycosuric cataracts occur more frequently among fat diabetic individuals than among thin ones. The cataract in these cases begins almost always in the posterior laminæ of the lens, and generally advances very rapidly; hence there is no time for the cataract to become hard and voluminous. Diabetic cataracts may be simple and entirely uncomplicated by any other alteration in the eyes, or there may also be present amblyopia with or without hemiopia, retinal hæmorrhages, etc. The latter may not interfere with the cicatrization of the corneal wound, but may compromise the ultimate visual result. A large corneal wound cicatrizes but slowly in a diabetic patient, and the cornea is in danger of sloughing. Hence in the great majority of cases linear extraction is the method to be employed, though sometimes recourse must be had to extraction by the peripheral flap, with excision of the iris.

67. Redard has made a number of experiments upon animals as regards the *remote effects of division of the optic and ciliary nerves.* After complete section of all the ciliary nerves the cornea immediately loses its transparency and glistening appearance, and becomes insensible, and the pupil dilates. If the section is partial, there are partial anæsthesia and dilatation. The circulation of the optic disk is interfered with, and the vision is diminished. The dilatation of the pupil lasts from five to six months. The corneal sensibility returns toward the end of the third month. After simultaneous division of the optic and ciliary nerves, the cornea becomes completely anæsthetic and the pupil enormously dilated. The fundus and disk are anæmic. The cornea frequently becomes perforated, the iris prolapses, and the eyeball rapidly atrophies, probably because in these cases it has been too extensively denuded, thus causing a lesion of the anterior ciliary vessels. In a number of cases, however, there was no atrophy of the eyeball after the lapse of a year and a half. In many cases the pupil did not regain its contractility for more than a year.

68. Clozier reports two cases of *progressive locomotor ataxia with interesting eye lesions.* In both there was entire absence of syphilitic symptoms, the motor incoördination was almost completely wanting, and the ataxy first betrayed itself by the ocular symptoms. These were accompanied by very violent pains in the region supplied by the ganglionic branch of the fifth pair. In the first case the pains seemed to follow the course of the anatomical lesion, becoming less as the latter was arrested, and more severe as it again became progressive. In the second case the neuralgic pains in the occipital and left parietal regions and left side of the face were followed by an incomplete but very distinct anæsthesia of the same regions.

69. Meyer's paper on *optico-ciliary neurotomy* is very practical. He employs the division of the ciliary and optic nerves for cases of neurosis only, and reserves enucleation for the grave cases of sympathetic ophthalmia which are exudative or plastic. He believes in neurectomy rather than in neurotomy, because he fears the regeneration of nerves that have simply been divided. His mode of operating consists in dividing the tendons of the external and internal recti muscles, and also of the two oblique. The fibrous capsule of the globe being then completely detached, he divides and exsects the optic and ciliary nerves, and then re-attaches the tendons of the divided muscles.

71. Ferrier's investigations into *affec-*

tions of vision from cerebral disease are very interesting, especially with reference to a distinct visual center. He found the latter in the monkey to include not only the angular gyrus, but the occipital lobe. A portion only of one visual center would in time suffice for vision with both eyes. It would appear that the hemispheres have a double relation with the eyes. The connection of the angular gyri was mainly crossed; hence lesions here and in the corresponding medullary fibers caused crossed amaurosis in amblyopia. Where there was a unilateral lesion of the angular gyrus and occipital lobe together, but not of each singly, hemiopia occurred and lasted for some time, but not permanently. Experiments on monkeys showed that recovery took place, and, therefore, that it might be expected in man; but this referred solely to true cerebral hemiopia, and not to hemiopia depending on lesions of the corpora geniculata or the optic tract.

73. *The blood-vessels of the eye* are often diseased *in certain general diseases* of the organism. Arterial hypertrophy is found in retinitis albuminurica, and is no doubt part of a general disease. A similar condition, however, is met with in glaucoma, where it appears to be a purely local affection. In twenty-three cases of non-hæmorrhagic glaucoma, the retinal arteries were hypertrophied in eight, while in seventeen cases of the hæmorrhagic form, the arteries were found thickened in all but one. In cases in which there has been choroido-retinitis the arteries and their sheaths are frequently found impregnated with pigment molecules. The capillaries often have their walls thickened and composed of a structureless, hyaline substance. The central artery of the optic nerve is hypertrophied in glaucoma, and may eventually become almost converted into a fibrous cord. The starting point of these vascular changes seems to be the sclerosis. In the retinal arteries it is difficult to define the exact seat of origin of the inflammatory changes, but in the central artery of the nerve it is the muscular coat which appears most often involved. In syphilis the retinal arteries are affected, but in a different manner. Their walls, on transverse section, are seen dissociated and thicker than natural. The choroidal arteries do not appear to be affected in this disease. In the serous inflammation of the uveal tract there are two distinct types of arterial disease; one may be observed in the choroid, the other in the retina. The choroidal arteries participate in the general character of the choroidal inflammation, which is a proliferation of the fixed corpuscular elements of its stroma. In the more advanced forms of this inflammation the endothelium of the arteries participates extensively. In the iris the smallest arteries are often seen completely blocked by this endothelial proliferation. Transverse sections of the retinal arteries show their walls crowded with leucocytes, and thus greatly thickened; their lumen is reduced to a narrow chink, not by endothelial increase, but by the swelling of the thickened walls.

75. Pooley's paper on the *detection of the presence and location of particles of steel and iron in the eye by the indication of a magnetic needle* is based upon a series of experiments undertaken by himself, and he draws the following conclusions: 1. The presence of a particle of steel or iron in the eye, when of considerable size and situated near the surface, may be determined by testing for it with a suspended magnet. 2. The presence and position of such a particle of metal may most surely be made out by rendering it a magnet by induction, and then testing for it by a minute suspended magnet. 3. The probable depth of the inclosed particle may be inferred by the intensity of the action of the needle near the surface. 4. Any change from the primary position of the metallic particle may be ascertained by carefully noting the changes indicated by the deflection of the needle.

77. Schmidt's conclusions as to the value of *antiseptic surgery in ophthalmic practice* are as follows: 1. Weak solutions of carbolic acid (1·5 per cent. for spray; 0·5 per cent. for irrigation) are not injurious to the cornea, and yet are sufficiently antiseptic. 2. Lister's dressing is to be modified as follows: the lids are to be closed by strips of carbolized English adhesive plaster, and then they are to be covered by a double layer of carbolized bleached gauze or muslin, then by a piece of fine oiled-silk, then sufficient carbolized lint (10 per cent. strength), and over all a flannel bandage. The greatest care and attention are to be employed as regards the patient's surroundings, the instruments, and the hands of the operator previous to the operation.

79. Verneuil has called attention to the *influence of conditions of syphilitic dyscrasia upon operations.* In certain operations upon the eyes, performed under the most favorable conditions, everything promising a perfect and rapid cicatrization, Galezowski has seen grave symptoms, even suppuration, appear without any known cause. Abadie has seen the same thing. What seems to confirm this view, is the rapid modification observed in these symptoms by anti-syphilitic treatment.

80. Pautynski employed a half-per-cent. solution of the *hydrobromate of homatropine*, and found that in man dilatation of the pupil began in 19·1 minutes, reached its maximum in from 30 minutes to two hours, and disappeared in 23·75 hours. He confirms Tweedy's assertion that there is less antagonism between pilocarpine and homatropine than between pilocarpine and atropine, and even asserts that there is no antagonism between the two. It seemed to him that after a hypodermic injection of pilocarpine the salivation and perspiration were increased by an injection of homatropine.

81. Ladenburg's experiments upon *the mydriatic alkaloids* show conclusively that hyoscyamia, daturia, and duboisia are identical with each other, and not merely closely related, and that atropia and hyoscyamia, though not actually identical, are isomeric in composition. He concludes, therefore, that there are only two mydriatic alkaloids, atropia and hyoscyamia. He also has succeeded in converting hyoscyamia into atropia, and on decomposition both of these alkaloids yield identical products.

OTOLOGY.

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4. Knapp's paper upon *bone conduction of sound* was the result of a comparison between the functions of the eye and those of the ear. If the windows of the labyrinth were filled up with bone, then the ear, according to Knapp, would be in the condition of an eye with a closed pupil; the sound waves would be irregularly transmitted to the cochlea, not producing the sensation of a sound image, but an indefinite, quantitative perception of sound. Knapp thinks direct bone conduction does exist, but that it produces only quantitative perception of sound, not useful hearing. He has never met with a patient who could hear his watch (H.D. = 24″) from the mastoid process, temple, or other parts, if he could not hear it when applied to the ear. He has had patients with acute and chronic diseases of the middle ear that could not hear his watch at all, or only when applied to the auricle; but, when he had punctured the drum head and inflated the ear by Politzer's method, his watch was distinctly heard not only when applied to the auricle, but also from the mastoid or temple. This he regarded as conclusive that the immediate bone conduction was of little or no account. As another proof of the latter point, he has never found a patient who was benefited more by the audiphone than by a trumpet.

6. Careful examination of cases of *paracusis Willisii* induced Loewenberg to deem it impossible to abstract from the various signs furnished a common feature as to the trouble in the ear. He found the following symptoms always present: both ears were deaf, often to different degrees; hearing was good for high tones, especially the higher ones; and as a negative sign there was absence of perforation of the drum head. As a rule, the patients also complained of headache and giddiness. He explains the phenomena of paracusis by supposing a condition of diminished excitability of the acoustic nerve, the sensibility of which is increased by loud noises, so that the patient is enabled to perceive vibrations which he would not perceive under ordinary circumstances.

7. This paper consists of extracts from a monograph upon *the organ of hearing in vertebrates.* The author some years ago described a terminal nervous organ in fishes, with its nervous branch, which had hitherto escaped observation, and which he then regarded as corresponding to the basilaris cochleæ of the higher animals. Later researches upon the higher animals have shown that this does not hold true, and that this terminal nervous organ, with its nervous branch, is a special formation, corresponding in the amphibia to the pars initialis cochleæ, tolerably well developed, and which is always found in reptiles, though very much reduced in size. It is present in birds also, though much smaller than in reptiles, and disappears entirely in the mammalia, where it enters into the constitution of the terminal nervous organ of the frontal ampulla. This terminal organ therefore belongs neither to the pars basilaris nor to the pars initialis cochleæ. Retzius calls it "*macula acustica neglecta*," and to the nervous branch he gives the name of "*ramulus neglectus.*" He also speaks of the mode of division of the auditory nerve in the different classes of vertebrates. In fishes this division is well marked, and still more so in all the higher classes. The auditory nerve divides into two principal fasciculi, of which one, the ramus anterior, or vestibularis, splits into three branches, one for each of the three organs, the recessus utriculi, the ampulla sagittalis, and the ampulla horizontalis. The other principal fasciculus, the ramus posterior, or cochlearis, also divides into three branches, one for the sacculus, one for the lagena cochleæ, and one for the ampulla frontalis; and sometimes there is a fourth branch to the "macula neglecta." This same mode of division prevails among amphibia, reptiles, birds, and mammals, including man.

8. Fränkel reports three cases of *purulent otitis media with cerebral abscess.* The first was a case of otorrhœa of long standing, exacerbation of the inflammation from syringing, meningitic symptoms, and death on the eighteenth day. At the autopsy there were found thrombo-phlebitis of the left transverse sinus, abscess in the subdural space and left temporal lobe, and purulent lepto-meningitis of the base and convexity. The second case was also of long standing, and the cerebral symptoms supervened after a blow on the head. At the autopsy there were found right purulent otitis media *without* perforation of the membrana tympani, absence of the incus, caries of the petrous bone, abscess of the right temporal lobe, and thrombo-phlebitis of the right transverse sinus. In the third case there was caries of the roof of the drum and of the external auditory canal, an inspissated exudation compressing the facial nerve in the Fallopian canal, purulent basilar meningitis, and abscess in the right temporal lobe. In a fourth case of bilateral otorrhœa after scarlatina, with head symptoms, in which the mastoid process was scraped out, there was extensive proliferation of cauliflower excrescences in the depth of the wound, and subsequently death from meningitis. At the autopsy there was found an epithelioma of the drum cavity, with destruction of the greater portion of the temporal bone.

12. Bezold regards *otomykosis* as a purely local affection of the external auditory canal, of the drum head, and in many cases of the tympanic cavity also. He distinguishes two forms: 1. The development of schizomycetes. 2. The development of hyphomycetes, or mold; and this is otomykosis in the narrow sense of the word. It does not necessarily cause inflammation in the ear, but when once purulent inflammation has been excited, whether existing before the appearance of the fungus or caused by it, the cure is markedly retarded by its presence. Where no perforation of the drum head exists, the secretion in these cases is serous. In regard to the question of pathogenesis, Bezold asserts that the proliferation of the spores of the fungus in the living tissues causes a distinctly marked, peculiar form of otitis externa. The spores grow luxuriantly in the auditory canal when oil is present. Another exciting cause is the presence of vegetable constituents in the canal, such as fragments of chamomile, or tea leaves from a poultice, or particles of cotton. A third exciting cause is the presence of dried secretion in the tympanic cavity, an old perforation of the drum membrane leaving the drum open.

13. Loewenberg believes that in the majority of cases *fungous deposits in the ear* are caused by the introduction of fatty substances, such as oils, into the auditory canal. These all undergo rapid decomposition in the warmth of the canal, and are transformed into glycerine and fatty acids. The spores of the fungi, which exist everywhere in the atmosphere, germinate rapidly amid such favorable surroundings. He therefore never prescribes any oily substances, but uses glycerine in place of them. When once the fungi have taken root and are growing, he employs alcohol against them.

14. Burnett cites a case of *reflex ulceration in the external auditory canal, due to decayed teeth.* After giving the history of the case, he states the general proposition that an irritation proceeding from diseased teeth and gums may excite waves of vessel dilatation in the correlated area of the drum cavity, in the drum head, or in the external auditory canal. Now, how can irritation of the filaments of the inferior dental nerve be communicated to the external auditory canal so as to bring about trophic changes in that part of the ear? The sensory division of the inferior maxillary nerve is connected with the otic ganglion, and this ganglion is connected with the plexus of the sympathetic distributed to the external carotid artery, branches of which supply the external auditory canal. Hence the correlation occurs through the medium of the otic ganglion. Irritation at one point in a vaso-motor tract suspends the inhibitory power of vaso-motor nerves in a correlated area; hence the vaso-motor nerves regulating the supply of blood to the external ear lose their power of controlling the caliber of these vessels, on account of the irritation conveyed to them from the teeth through the otic ganglion. The vessels, therefore, become distended, and pain and inflammation result.

16. Pierce's *method of treating the later stages of chronic suppuration of the middle ear* consists in pressing plugs of medicated cotton-wool down on the suppurating surface, renewing them as often as desirable.

17. Hotz recognizes the *influence of malarial poisoning in causing certain aural diseases*, among them acute purulent otitis media. One feature which he has noticed has been the disproportion between the subjective and the objective symptoms; the severity and extent of the pain, together with great sensitiveness of the auditory canal and tenderness of the mastoid process, pointing to violent if not complicated purulent otitis; while the objective symptoms, together with the nature of the discharge, indicate only a moderate degree of inflammation. Among aurists in the West, the use of quinine for acute inflammations of the middle ear is a matter of daily practice. It is not necessary in these cases that the disease show the intermittent or remittent character of a purely malarial disorder. Hotz prefers small and frequent doses to the large doses usually given for malarial fevers, and advises the continuance of the remedy for some time after apparent recovery, in order to insure a permanent cure.

21. Gottstein concludes from observations of his own that all that we can assume as established beyond doubt, in regard to *Ménière's disease*, is that affections in the sound-conducting apparatus can, under certain circumstances, produce transitory disturbances of the equilibrium without justifying us in assuming organic changes in the labyrinth; and, secondly, that, in affections of the middle ear, attacks of vertigo may be associated with deafness in a few rare cases when the morbid process has invaded the labyrinth. He considers only those cases in which it must be assumed that the auditory nerve is affected centrally, or in its course, or in its peripheral expansion; and he distinguishes these cases as the *neuropathic form* of Ménière's disease. He finds two groups of cases in which deafness and disturbances of equilibrium are united: 1. Those in which the patients suffer from meningeal symptoms for a longer or shorter period, recover completely, but remain deaf and walk staggeringly. 2. Those in which the deafness and vertigo appear instantaneously, without any change in the general health. Out of nineteen cases cited, there were six in which meningitis could probably be regarded as the starting point of Ménière's complex of symptoms. In the thirteen remaining cases, fever and violent headache were present; vomiting was not observed at first in two cases; the mind was more or less affected in nine; in three cases, fever, headache, and vomiting were the only symptoms preceding the affections of the ear. The patients, with one exception, belonged to the lower classes, and lived amidst bad sanitary conditions; their age varied between 2 and 16 years. If we take all these points into consideration, and add that an epidemic of cerebro-spinal meningitis had raged in the neighborhood for some months, we have no hesitation in connecting these cases of auditory vertigo, with fever and other peculiar symptoms, with this epidemic. In the neuropathic form of Ménière's disease, the clinical picture is very different, and, from the sudden onset of the symptoms, Gottstein proposes to call it *apoplectiform.* This form is much rarer than the other, he having seen but three cases. The affection of the ear occurring in tabes he does not believe is seated in the labyrinth, but thinks that the auditory nerve is affected at or near its central origin.

22. In the causation of *Ménière's disease*, Guye lays great stress upon cold and upon catarrh of the middle ear. He thinks also that fissures of the skull cause the disease during their cicatrization. According to him, Ménière's disease, or this particular group of symptoms, includes all those cases in which a sensation of vertigo is caused by abnormal irritation of the terminal nervous apparatus in one of the semicircular canals. In a narrower sense he includes also those cases of inflammatory processes in the semicircular canals themselves, or in the middle ear, producing vertigo, which is either continuous or caused by normal movements of the head, or appears only paroxysmally at intervals of weeks or months. Most of the cases of Ménière's disease are of a secondary nature, that is, are due to inflammatory processes in the tympanum or the mastoid antrum. In typical cases the vertigo is preceded or accompanied by sensations of rotation; first, about a vertical axis, and always toward the affected side; this is followed by a sensation of rotation forward and backward about a transverse axis; the vertigo then generally becomes complete and the patient swoons, with or without loss of consciousness and vomiting. The seizures are often accompanied by intense subjective noises, which may continue permanently. In long-standing cases, a slight feeling of vertigo persists even between the attacks, and is noticed especially on first moving the head after waking from sleep. The affection can be relieved with or without loss of hearing. Local treatment is most successful in cases that are not too old, and often indeed in the most hopeless cases. Among internal remedies, quinia deserves most reliance, as it often lengthens the interval of freedom from attacks.

23. Politzer speaks of *pathological changes in the labyrinth* hitherto unrecognized. In one case, microscopic sections of the softened petrous bone showed the cochlea, semicircular canals, and vestibule to be filled with a very vascular bony neoplasm. The auditory nerve was normal up to its entrance into the bony mass. The cause was probably an acute purulent inflammation of the labyrinth, from which arose a proliferation of the connective tissue, in its lining, from which the bony neoplasm was developed. This inflammation occurred in a child two years and a half old, and is the first proof of acute labyrinthine inflammation occurring in a child.

24. Ladreit de Lacharrière considers that there are certain morbid conditions of the ear which are not recognizable by any change in the drum head or in the ossicles, but which may be due to vaso-paralytic congestion. The *application of electric currents in cases of ear disease* of this sort, by causing contractility in the vascular walls, puts a stop to this state of blood stasis and passive congestion. In his experiments he employed the continuous current, the rheophores being nipple-shaped, so that the projection filled up the orifice of the auditory canal. They were first moistened and then applied simultaneously to both ears, and there maintained in place by a double band. He considers it necessary that the current should pass through the base of the skull, for thus the deeper parts of the ears are affected by it. When the current is suddenly interrupted, the patient has photopsic symptoms, showing that the optic chiasm also has been irritated. He employs the continuous current in cases of simple weakening of the auditory nerves, and always with satisfactory results. He has never employed more than eighteen elements of Gaiffe's battery, and finds that twelve are usually sufficient.

25. Buck's paper on *fractures of the temporal bone* is based upon accurate observation of fourteen cases, and his conclusions are most rational and philosophical. He makes two classes of fractures of the temporal bone, viz.: 1. Fracture or diastasis of the tympanic or squamous portion in the region of the middle ear, without implication of the petrous portion. 2. Fracture of both the tympanic and the petrous portions. There may possibly be a third class also, fracture of the petrous portion of the temporal bone without implication of the middle ear. In the *first* class he makes three subdivisions: 1. Cases in which no visible hæmorrhage or other discharge takes place from the ear. 2. Cases in which a hæmorrhage or bloody discharge from the ear follows the accident. 3. Cases in which the accident is followed by spitting of blood, due to its escape from the middle ear by way of the Eustachian tube into the naso-pharyngeal cavity or the nasal passages. In all these three classes, there is unmistakable evidence of serious injury to the parts immediately surrounding the drum membrane, and yet the hearing may not be seriously affected. Buck believes that, when in a case of injury to the head loss of hearing is discovered shortly after the occurrence of the accident, it is safe to assume either that a fracture has taken place through the labyrinth, or that an extravasation of blood has occurred in the cochlea, without a fracture. Total loss of hearing means a fracture of the petrous portion of the temporal bone, though we are not justified in excluding the possibility of a mere extravasation of blood without fracture. At the same time, there are no facts which show that the blood-vessels of the labyrinth are specially predisposed to rupture under the influence of a mere concussion. Buck maintains that in every case of suspected fracture of the temporal bone a careful aural examination should be made. When a fall or blow upon the head is followed by bleeding from the ear, no matter how trivial, a fracture of the temporal bone may be diagnosticated in the neighborhood of Shrapnell's membrane, and probably in the line of the Glaserian fissure. The symptom of bleeding from the ears does not justify us in assuming that the line of fracture extends beyond the region of the tympanum, and visible bleeding is not a necessary accompaniment of such a fracture. On the other hand, inflammation of the parts surrounding the drum membrane affords excellent evidence of such a fracture. Buck also very justly emphasizes the necessity for being very careful how we pronounce a watery discharge, no matter how profuse, to be due to the escape of the cerebro-spinal fluid; for, in exceptional cases of acute inflammation of the middle ear, the flow of a thin serous fluid from that cavity, after a perforation has occurred in the drum head, is so copious as to excite very great astonishment. In Buck's opinion, the breaking of the bony wall of the tympanum and the consequent laceration of the subjacent soft parts would supply an adequate exciting cause for such a high degree of irritation of the tympanic mucous membrane as this profuse watery discharge would imply. As a final conclusion, Buck states that the lesions demonstrable by the aid of the speculum and reflected light, in the soft parts immediately surrounding Shrapnell's membrane, furnish a valuable means of locating at least a part of the injury done to the temporal bone.

27. In attempting to attain a perfect *antiseptic dressing for suppurative ear disease*, Cassells has experimented with a large number of medicaments. Carbolic oil or water failed to do any good in arresting putrefaction, and often irritated the tissues. Strong alcohol (60 per cent.) or absolute alcohol was of great service in controlling suppuration from the ear. Dilute "liquor carbonis detergens" gave very nearly perfect antiseptic results. Sulphurous acid caused altogether too much irritation. Boracic acid, the crystals or the powder, he found of no use in controlling suppuration, but when used as an impalpable powder, packed tightly into the meatus, the results were excellent. Whenever syringing was used, however, the suppuration returned. So he gave up washing the ear, and cleansed it with dry cotton wool. He found boracic acid in this form a perfect antiseptic for all cases of suppuration of the middle ear. The dressing may be allowed to remain in the ear for days, and even weeks.

SEMI-ANNUAL REPORT ON PSYCHOLOGICAL MEDICINE.

No. II.

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BOSTON.

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6. In his paper on the *medico-psychology of puberty and adolescence*, Dr. Clouston remarks that each period of life has its own type of psychological disturbance, just as it has its special kinds of ordinary disease. The changes of mental activity at puberty, and the awakening of vast tracts of encephalic tissue, do not take place without much risk of disturbance to the mental functions, especially where there is an inherited predisposition in that direction. The insanity of puberty is always strongly hereditary. The period of adolescence, a few years later, is yet more dangerous; still, insanity in its worst forms is rather a disease of middle or advanced life, slight attacks of nervous and mental trouble being more common in youth. Epilepsy and chorea are frequent. The insanity of puberty is characterized by motor restlessness, noisy and violent action, or, in the more rare melancholic forms, by cataleptic rigidity. Incoherent delirium is more common than fixed delusion. The mental disturbance characteristic of adolescence is allied closely to that which occurs at puberty. This period is very liable to attacks of mania which have a special relationship to the function of reproduction. The periodicity and remission of the *nisus generativus* in both sexes, and the menstrual periodicity which accompanies it in females, is reflected in a periodicity and tendency to remission in the insanity of adolescence. The treatment of these cases should be founded on physiological considerations. The completion of the period of adolescence should be attended, in both sexes, with considerable adipose deposit, with increased strength, vigor, and general good nourishment of the body. We should endeavor to attain this in all cases of mental disease at this period. Two things work the other way—the general brain excitability, and the morbid strength, and often perversion, of the generative *nisus*. The one tends to mania, sleeplessness, purposeless motor action, thinness, and exhaustion; the other, to erotic trains of thought, sexual excitement, and masturbation. Inaction, reading, indoor life and amusements increase the one, while novel-reading, solitude, and long hours in bed aggravate the other; and animal food and alcoholic stimulants give increased strength to both morbid tendencies. Active exercise in the open air, walking, digging, wheeling wheelbarrows, shower-baths in the morning, and athletic games are therefore of service. But diet is the chief reliance. Milk in large quantity and often, bread, porridge, and broth should be the staple articles. The patient may have some fish, or fowl, or eggs, but milk is the sheet-anchor of treatment. Alcoholic stimulants are not to be given, but an emulsion of cod-liver oil, hypophosphite of lime, and pepsin, to those who can assimilate it, with an occasional bitter tonic, is of use. The effect of this treatment is marked. Patients may lose weight during the most acute excitement, but, when a patient begins to gain weight within three months or so, the prognosis is favorable, and this gain may be in spite of sharp excitement and much sleeplessness. The fattening is antagonistic to the disease. Masturbation is less practiced on this diet, and is less damaging to brain function. Children of neurotic tendencies, as a rule, eat too much meat. A change to milk, fish, and farinaceous food will often produce marked improvement in their nervous irritability, and tend to prevent insanity. Diet and regimen, and avoidance of improper educational demands on the brain, are our best means of tiding children of such tendencies over these dangerous periods.

8, 9. In the Psychological Section of the British Medical Association, the influence of *alcohol as a cause of insanity* was discussed. Dr. Bacon thought it was greatly exaggerated; that intemperance did not hold a chief place as a cause; that instead of fourteen per cent., as alleged, four per cent. would more nearly represent the proportion of cases so caused. Dr. Sutherland agreed that the proportion was overestimated, basing his views on an analysis of two hundred cases in private practice. Dr. Hack Tuke had at one time carefully collected particulars, and come to the conclusion that about twelve per cent. of cases of insanity were due to drink. Dr. Edmunds thought it very difficult to arrive at the truth, but considered that alcohol brought many healthy persons into a neurotic condition liable to result in insanity.——Dr. Beach read a paper on the *intemperance of parents as predisposing to imbecility in children.* American statistics showed that over thirty per cent. of the parents of idiotic and feeble-minded persons were intemperate; that intemperance acted as a main or direct cause in a few only, but as an indirect, accessory, or predisposing cause in many. Dr. Shuttleworth had formerly presented statistics showing a much smaller percentage than this, and, while the discrepancy was partly due to difference of social level, he thought the American statistics showed too many concurrent causes in action to make it proper to give drink such preëminence. Other gentlemen expressed various views. Some thought that drunkenness during procreation was a frequent cause. Dr. Crichton Browne, the President, thought the influence of intemperance had been exaggerated, but that the toxic action of alcohol, besides producing delirium tremens, mania a potû, the monomania of suspicion, and alcoholic dementia, was also a contributory cause where a tendency to insanity existed. The statistics of the Commissioners of Lunacy, ascribing fifteen per cent. of cases in Yorkshire to intemperance, were probably correct.

15. Dr. Browne's address on *the study of medical psychology*, at the opening of the Section of Psychology, at the annual meeting of the British Medical Association, alludes to three "circles" of mental disorder: 1. That including lunatics, idiots, and persons of recognized unsound mind; 2. The "crazy circle," including inoffensive lunatics at large, those whose lunacy is concealed, those whose disease is of a partial character, or is incipient, and hosts of crack-brained, imbecile persons, moving in all grades of society; and 3. An outer, neurotic circle, embracing sufferers from all forms of nervous disease, not accompanied necessarily by mental disorder, but to be placed in the same category, and often tending toward it, as epilepsy, paralysis, locomotor ataxia, spinal disorders, neuralgia, hysteria, chorea, etc. The "crazy circle" was roughly estimated to be, in Great Britain and Ireland, at least twice as large as the "insane circle," and the "neurotic circle" still larger. They were not sharply defined from each other, and interchange was constantly going on between them. Dr. Browne believes that all forms of nervous disorder are on the increase, and alludes to some of the causes, most fully to the influence of education as now conducted.

23, 24, 25. Dr. Gray, in his paper on *the home treatment of insanity*, thinks that a defect of the profession in America is the relegation of the study and treatment of insanity so absolutely to the specialist. This indifference to the subject on the part of the general practitioner is a peculiar misfortune to the patient, because of the distrust with which he is regarded after coming from an asylum, the mental effect of the confinement, and often the injurious treatment conducted there. [!] Overcrowded wards, and the herding of patients together like sheep, while they are left to wear out their ailments or their lives without aid from medicine, steady occupation, or outdoor exercise, are characteristeric of county and municipal asylums, and are to be seen in the public institutions around New York. [!] Private asylums have better surroundings, but even in them treatment and systematic occupation are too much neglected, and the patient is committed to the care of the *vis medicatrix naturæ.* There are, of course, exceptions to this, but, as private asylums are beyond most patients' means, the physician should consider whether they may not be better treated at home. A large proportion of cases of melancholia can readily be so treated. The psychoses of pregnancy and the puerperal state are usually managed by the family physician, and miscellaneous cases occur, characterized by mental excitement due to appreciable or remediable causes, which can be relieved. The physician should disabuse his mind of the false idea that insanity is a disease apart, beyond the reach of drugs. It is a disease of tissue—of the cortex of the brain—as distinctly as pneumonia and nephritis are of other organs, and is just as responsive to proper remedies. Happy results often ensue from attention to disorders of other organs. Hallucinations have been cured by removal of impacted wax from the ear, and insanity has been cured by curing dysmenorrhœa. Melancholics need stimulation. As they are cases of cerebral exhaustion *par éminence*, they need quinine and cod-liver oil, iron if anæmic, and phosphorus. Opium should be given with a free hand, and no fear need be had of the formation of the opium habit. [!] The diet must be generous, with alcoholic stimulants freely administered. Pregnancy and lactation are, as a rule, positively deleterious to the insane, and the physician must consider whether or not to empty the uterus, wean the child, or prevent further pregnancies. These patients also require the supporting treatment. Sedatives should be carefully employed, and the most efficient in violent mental excitement is hyoscyamine, sometimes felicitously termed "chemical restraint," in the dose of $\frac{1}{50}$ of a grain of the crystallized extract every three or four hours till the patient becomes calm, increasing the dose from time to time to keep up the influence. It can be given for many days without any constant depression of the heart or respiration. Quinine increases the calmative effect and decreases the languor which is induced by it. To produce sleep, the combination of chloral and a bromide is best. Melancholics must be cheered up, spurred on to overcome their gloom, and encouraged. Excited patients must be humored and guided, rather than led. Force should not be used or threatened, except against actual violence. ═══ Dr. Mattison stated that hyoscyamine would produce sleep of long duration, in large (one-grain) doses, while $\frac{1}{10}$ of a grain would only excite. ═══ Dr. Gray remarked that sleeplessness might depend on a congested or an anæmic brain, on lack of food, or on maniacal excitement, and must be treated accordingly. In excitement, hyoscyamine might act as a hypnotic, but usually could not be relied on, though large doses might produce coma or downright narcotism. ═══ Dr. Gray has found *hyoscyamine* to greatly diminish tremor and restlessness in two cases of paralysis agitans. ═══ Dr. Shaw has found it of service in acute and subacute mania, to give rest and sleep; in epileptic mania, to ward off maniacal attacks; in alcoholic mania with delusions, where it replaces chloral with advantage; and in paralysis agitans, in which it can be used with relief day after day for months. He has never seen it interfere with appetite, nor produce other unpleasant effects, except slight dryness of the fauces. It is useful wherever abnormal muscular action is present, and may be used as a hypnotic, other drugs failing.

30. In regard to the *isolation of lunatics*, when a man loses his reason, it becomes necessary that the reason of others, more or less, shall supply its place—the movements of the afflicted person are subject to the control of others, and his property is taken from his management and control. What legislation is required to provide for such cases is a much-vexed problem. In the more sudden and violent forms of insanity, the patient is watched, his wishes are disregarded, medicine and food are often forced on him, and his limbs are subjected to restraint. All this, because necessary, is justified by the common sense and feeling of mankind. It has to be done by the friends or relatives—abstaining from it would be neglect of duty, and this right does not become a wrong if the place of confinement is some other place than one's own home. Two physicians certifying, under oath, to the insanity of the patient, and the application for the admission to hospital being made by a near relative or responsible friend, this natural right of control has been recognized by law, and the question arises, whether, in view of the various forms of insanity, of our social habits, of the sacredness of private grief, of the liability to mistake, and of the requirements of justice, anything more is necessary. We must consider the amount of abuse which any proposed restrictions as to the exercise of this natural right are intended to prevent, and the amount of mischief the restrictions may themselves occasion when not really required. For the most part, the medical certificate fulfills every requisite purpose, and there is a peculiar fitness in thus securing the performance of a painful duty without delay or public exposure of affliction. It is in accord with our national habits and with the rights of persons to manage their affairs in their own way. It is alleged that the physicians may be biased or mistaken, or the relatives may act when it is not necessary. Hence some propose stringent legislation and the requirement of a legal inquisition in every case. But who is so competent to make an inquisition in such a case as a physician? It is proposed, and is in some places the law, that no one shall be placed in an asylum without the knowledge and consent of a judge of a law court. In Illinois a trial by jury is necessary in every case. To remove a person from home at the very time when he seems most in need of the care of friends, and intrust him to strangers, is always a painful duty, and hesitatingly performed. Advice and friendly remonstrances, the failing strength of nurses, and increase of the illness are often disregarded, from mistaken affection. The obligation to call in strangers to witness this private grief would serve as an additional excuse for delay. This sensitiveness is so strong and natural that it should be regarded. The effect of the public investigation on a patient is highly objectionable. But many believe that persons are improperly committed to and detained in lunatic hospitals. This arises from the coolness, coherency, and good sense which often mark the conversation of the insane, and their correct conduct, which seem to preclude the existence of mental disorder, as the latter is popularly supposed to imply great turbulence. Their stories are plausibly told, and believed. It is also thought that many, though technically insane, might as well be at large. But these persons have often proved by actual trial to be very unfit inmates of a private family; and to turn them adrift into the world would be really a cruelty. A roving commission, with powers to visit all persons confined as insane, and discharge all they deem not to be insane, is the favorite remedy proposed for abuses just now. But this would do immense harm. A mere disposition to do right is but a poor qualification for a scientific inquiry. The plan is impracticable from the very number of those inmates who would claim to be wrongfully detained, and regarding whom the judgment of such a commission would be imperfect. It would take *years* to so investigate in the hospitals of Pennsylvania alone. But the evidence of actual abuses in the detention of patients is not reliable. Patients committed for iniquitous purposes are not to be found. In England, where the abuses in question are supposed to be most frequent, they have had for forty years a Board of Commissioners of Lunacy for the express purpose of detecting them, and they have not recommended the discharge of a single patient on this ground. But neither facts nor arguments affect the popular sentiment, and we should rest satisfied that, though the safeguards are sufficient, popular distrust is an unavoidable result of correct hospital management. The number and rapidity of recoveries are lessened by the reluctance and the impatience of friends, and the effect of this is unfavorably felt at present in England, where also dangerous patients are sometimes prematurely discharged from fear of the interference of the commissioners. The exposure, excitement, and trouble of a public trial would be shocking in many cases. In some cases, however, a certificate alone is not sufficient, from lack of any friend able or willing to act. In such cases, a commission of inquiry should be appointed by a court; and this provision is sufficient to secure the rights of all parties.

32, 33. In the *management of the insane*, in addition to the medical treatment, said Dr. Mead, the psychiatrist had to be the guardian of the insane, and employ a wide range of moral means beyond the needs of any merely sick person. In spite of the progress in the management of lunatic hospitals during the last fifty years, complaint was as frequent as if nothing had been done. Complaints usually came from uncured patients, their disaffected friends, and discharged attendants. Loss of confidence had also been occasioned by exaggerated statistics, the amount of restraint employed, and so forth. Occasional irregularities of course did occur. The Legislature of Massachusetts had illogically taken from superintendents of asylums the power to sign certificates of insanity, as if the more a man knew, the less trustworthy he was to give an opinion. This was unjust and unnecessary, and tended to lower the standard of those called on to certify. Non-restraint was faithfully adhered to as a principle in this country. It must be remembered that there was an "American type" of insanity, with a disposition on the part of the individual to be a law unto himself. In England, where greater progress in non-restraint was claimed, patients were more obedient. The treatment of the insane should combine all forms of work, instruction, or recreation that could be used, separately or in combination. Any means should be adopted which might withdraw the patient's mind from himself.——Dr. Martin, though disapproving of the clause of the new law depriving all connected with asylums of the power of certifying, still did not believe that any mistakes had been made, or sane people deprived of their liberty, or been put in the slightest danger of such deprivation, because the physicians signing their certificates were not experts in insanity. He believed it to be necessary to use the money, wasted too often in architectural adornment, in raising the standard of attendants.——Dr. Hazelton spoke of the absurd insufficiency of the fee for certifying allowed by the new law. Generally speaking, all insane patients required to be removed from home, and treated in a hospital. Minors, however, could always be treated at home with good result, if properly secluded. Mechanical appliances were generally much better for restraint, he thought, than the hands of attendants or relatives, and he related instances in proof.——Dr. Cushing believed the new law in Massachusetts to be an improvement on the old one, certificates of insanity being sometimes too readily given, and needing criticism by competent authority. The new law did not constitute the judge an expert, but did give some guarantee that those signing the certificates were experts. A proper place should be furnished for the detention of insane patients waiting examination.——Dr. Channing thought the new law a step in the right direction, but the English law, which only prevented a superintendent from certifying a patient into an institution in which he was interested, was quite sufficient. Asylum physicians stood in the relation of family physicians to their patients, and ought to be able to act in case of transfer of a patient to another hospital. The difficulty and responsibility of determining the question of recovery to *sanity*, which the superintendent had to do, were often greater than in pronouncing on the insanity. There were three causes for the occasional abuse of patients by their attendants: first, lack of sufficient supervision, owing to the small proportionate number of medical officers; second, the character and moral influence of the superintendent; and, third, the quality of the attendants.

In commenting on the papers on the Management of the Insane read at the Seventh Annual Conference of Charities and Corrections, the editor states that it is apparent that reforms in the customary management of the insane are urgently needed, but that the majority of trustees and superintendents of asylums do not yet perceive it, though all sides are willing to be convinced. Our asylums are far below the best in England and Germany, in that sufficient pains are not taken to invite scientific criticism of their methods; that high general and special training are not habitually made a necessary qualification for appointment as superintendent or assistant physician; that the plan of abandoning mechanical restraint and allowing wider liberty has not generally been tried with the thoroughness and under the conditions which foreign experience shows to be essential for its success. The answer made to these criticisms is that a more intelligent, zealous, and conscientious body of men than our superintendents and trustees is not to be found; that the appointments are the result of long deliberation, and are the best which can be made; that non-restraint has been thoroughly studied and is practiced so far as seems advisable—less, to be sure, than in Europe, because our insane are more violent than theirs and the attendants less numerous; that our patients are given many comforts and luxuries which there are wanting; that, after all, there is so little to be done medicinally in these cases; that good sense and administrative ability are qualities which tell more in a superintendent than scientific knowledge. The last statement, though rarely made in words, must have had great weight with boards of trustees, who are still secretly swayed by the old strong belief, from which even physicians can hardly free themselves, that an insane person is one possessed with an evil spirit, whose case pathology can never unravel; one to be treated with kindness, but spoken about beneath the breath, like a friend in disgrace, and secluded till the demon is exorcised or voluntarily departs. To this the reply is, investigate still more thoroughly; spend a year or two in investigating the best authorities, German, English, and French; master the working of their asylum systems, and science will be found not so incompetent to deal with this subject as is generally thought; at any rate, no branch of medicine calls for such wide and close scientific training and familiarity with instruments for scientific research. Common sense will remain the most important qualification for a superintendent, but, while this is a rare quality, the other may be added at the cost of a little money. Even more important than opportunity for preliminary study is assurance of time and facilities for subsequent research, instead of engrossment in routine hospital and commissariat duties, and endless correspondence. The question as to non-restraint in this country is settled in the affirmative by the experience at Kings County Asylum, New York, where a large number were formerly under mechanical restraint, but where it is now entirely abandoned, though the proportion of attendants employed is only about one fifth of that in Berlin. The amount of out-of-door employment given has been increased to the utmost practicable extent, and the result of both together has been more than satisfactory. An important suggestion made at the Cleveland Conference was as to the appointment of consulting medical boards for lunatic hospitals in communities where it is practicable.

35. It is to a lack of mutual understanding between hospital authorities and the public about *mechanical restraint in asylums* that we owe the continued prejudice and want of confidence still felt. Till the beginning of the present century the treatment of the insane was harsh and unchristian-like, and brutal measures, dungeons, and chains were used, and patients were terrified with revolving chairs, swings, shower-baths, traps in the floor, etc. Pinel recognized insanity as a disease, and gave the first impetus to non-restraint. Connolly and others have carried the work still further, and abolished mechanical restraints *in toto*, proposing to substitute the hands and arms of attendants. But Connolly's enthusiasm carried him too far in theory, for attendants are human, and, even if possessed of the high intelligence and rare qualities necessary to manage difficult and turbulent cases, such as are frequent in this country, without the use of unnecessary force, still the conflict which manual control usually implies is demoralizing, and bad for both patient and attendant. Seclusion may work well for short periods, but, if substituted habitually for mechanical restraint, it must, by cutting the patient off from association with others, defeat one of the main objects of treatment. It is the first step backward toward the solitary confinement of past ages. For years the ultra ideas of Connolly held sway in England, but the reaction has set in, and restraint is again being used, though in a limited number of cases. Dr. Lauder Lindsay has recently called attention to the report of the English Lunacy Commissioners, "impregnated as they have been with Connollyism for the last twenty-five years," which shows that mechanical restraint is employed in those English asylums that bear the highest reputation. He shows the makeshifts which are resorted to in some asylums to take the place of restraint, such as dry and wet packing, tight wrapping in a sheet, etc., and says he has only heard of three out-and-out supporters of Connollyism in twenty-five years. Dr. Bodington says the non-restraint system, though a misnomer and a sham in England, has done much mischief there. It is a systom of pseudo-philanthropy, not true philanthropy. Dr. Stearns, of Hartford, and Dr. Shew, of the Connecticut State Hospital, have noticed the same mechanical appliances in England that are used in this country, and some forms that are no longer in use here, and remark that there is now a great readiness to say that mechanical restraint should be used in extreme cases. No doubt it is much less frequently employed than it once was, but neither America, France, nor Germany believes in its total discontinuance. American superintendents have been gradually abandoning the most exceptionable forms for more than thirty years, but they believe that true humanity requires its use in preference to irritating the patient by controlling him by the hands of attendants. In the Northampton Hospital, Dr. Earle reported less than four per cent. of his patients as under some form of restraint—mostly by camisoles, and in some cases by leathern wristlets or muffs.

He considers the iron handcuff as most effective and humane for strong, dangerous men, as not causing abrasion of the skin. The crib-bed he thinks a great blessing in certain cases, patients sometimes continuing to use it voluntarily during convalescence. At the Taunton Hospital five per cent. of the patients were at one time under restraint. At the Auburn Asylum for Insane Criminals it happened that none was used for nearly a year, there being over one hundred patients in the hospital. But the Superintendent, Dr. McDonald, thinks it a neglect of duty not to use it in certain cases. The more the surroundings of the insane can be improved, the less restraint will be needed. It should not be used without express medical sanction, like any other remedial appliance, and exact records should be kept as to its form, cause of application, duration, etc. At the Washington Asylum fifty carefully selected patients have recently been employed in various departments of work, and placed in a new building without window guards, and with only the outer door locked at night. They are fed liberally, and none of them desire or try to run away. At Lenzie, Scotland, there are five hundred patients with no locked wards. [A recent visitor to some of the English hospitals, in which restraint is kept at a minimum, noticed the frequency and liberality of the patients' meals, and was assured of the efficiency of copious feeding as a means of preventing restlessness and irritability!]

36. This case of *trephining in a lunatic* was that of a man who received a blow on the head from a hammer in August, 1878. He was not stunned, but always after felt the effects—at first as if he had a cold in the head; six months after, being sick in bed; afterward was unable to work, from giddiness, with tingling and numbness of the legs; and a year after, could not fix his mind on anything. In October, 1879, he had noises in the ears; dragging pains in the vertex, arms, and inner side of the legs; cold feet; and inability to sleep. He often put his hand to the cicatrix on his vertex. His symptoms grew worse, and he became irritable and morose, and talked of suicide. The left pupil was the larger, and he slept very little. In January, 1880, he threw himself from a staircase and fell fifteen feet, damaging his ankle, and was sent to a lunatic hospital, where his symptoms continued. In March, under ether, a piece of parietal bone three quarters of an inch in diameter was trephined from the seat of injury, though no fracture was found. The dura mater was of a deep purple color, but apparently healthy, and bulged, with pulsations, into the wound. Bleeding vessels were tied, silver-wire sutures and carbolized cotton were applied. The wound healed rapidly, and his condition so improved that he went to work in the asylum carpenter's shop in four weeks, was discharged in June, and in September was earning a living for his wife and family at his wood-carving trade.

38. Dr. MacDonald reports a remarkable case of *feigned epilepsy* in a thief, thirty-three years old, from England, who was what is known among criminals as a "dummy chucker," that is, a person who falls down in public places in a pretended fit, while his companions pick the pockets of the crowd that gathers. He deceived the public authorities in England, though severe tests were applied to him in prison, and, being sent to hospital, improved his opportunities for observing genuine cases of epilepsy. Once, to convince the officers of his prison that his was genuine, he "chucked a dummy" on a third-tier corridor, and rolled off on to the floor nearly thirty feet below. He afterward came to New York and pursued his specialty with a gang of pickpockets, and in various hospitals succeeded in convincing the physicians that he was epileptic. He came under Dr. MacDonald's care at the Auburn Asylum for Insane Criminals, and at the first attack seen he was found on the floor, his face distorted and livid, frothy saliva tinged with blood oozing from his mouth, his body seeming violently convulsed, while three people were holding him to prevent him from self-injury. The convulsions seemed to recur rapidly, each one beginning with muscular rigidity, with the head drawn to one side and his body twisted on itself. Respiration was almost completely arrested. Then came alternate contractions and relaxations of different parts of the body—his head was brought so violently against the floor as to abrade the scalp, his tongue was wounded, the respiration was jerky, and at each *expiration* bloody saliva was forcibly ejected from the mouth. His pulse was accelerated, his eyes were turned upward, and his pupils were moderately dilated, the room being partially darkened. His hands were clinched, but *the thumbs were not closed within the hands, and when the hands were forced open he closed them again. There were no visible indications of relaxed sphincters.* Then came muscular quiet, immobility, and stupor, lasting for a few minutes. He would gaze stupidly around, and then another "spasm" would supervene. This all lasted an hour, and was followed by pretended sleep, and he appeared confused and complained of headache for a day or two. His head and face were covered with the cicatrices of wounds acquired in falling, and he put on, when he chose, a peculiar imbecile expression. After assurance that his simulation was detected, he finally confessed all, and on one or two occasions, after borrowing a penknife and slightly cutting his tongue, he "chucked dummies" at the request of his physicians. He went back to prison, and after discharge went to New England and Canada, practicing his profession, and afterward was recommitted to prison and was again sent to Auburn! The elements leading to his detection were his motive for feigning; the occurrence of paroxysms during medical visits; the readiness of his speaking of his disease and showing his scars; the change in facial expression when unobserved, as he supposed; the position of the thumbs, absence of lividity of the nails, and reclosing of the hands; non-relaxation of the sphincters; and the absence of minute extravasations on the forehead, throat, or chest. The presence of pallor and the condition of the pupils are not conclusive tests of epilepsy, though insusceptibility to light would be of value as an indication but for the difficulty of determining it on a person violently convulsed.

39. From the observation of four cases of *insanity due to secondary syphilis*, the following conclusions are drawn: 1. That the secondary fever gave rise to the mental symptoms; 2. That the symptoms were analogous to those produced by alcohol, narcotics, and essential fevers; 3. That no separate symptom group was needed for the syphilitic psychoses; 4. That mercurial inunction yielded the best results, applied by means of mechanical restraint; 5. That asylum treatment was not advisable if it could be avoided; 6. That, apart from predisposition, no light was to be drawn as to who was or was not liable to insanity from this cause; 7. From analogy, the opinion was held that no brain changes were likely to be found post mortem in patients dying with mental symptoms in this disease.

40. In these lectures on *the opium habit*, based on cases treated at the Washingtonian Home, and on inquiries made at fifty apothecaries' shops in Chicago, Dr. Earle states that, of 235 habitual opium-eaters, three fourths were females, many of them prostitutes. Two thirds were Americans by birth. The larger number were between 30 and 40 years old, of the middle class, and either were or had been married. Most began its use for the relief of pain, under direction of a physician. The form of the drug used was morphia in 120 cases, gum opium in 50, tincture of opium in 30, unknown in 27, paregoric, M'Munn's elixir, and Dover's powder in the remaining 8. The quantity used varied from $\frac{1}{8}$ of a grain of morphia, or its equivalent, to 60 grains daily. A considerable number of persons not recognized as opium-eaters used the equivalent of from $\frac{1}{8}$ to 1 grain daily, and in the more confirmed cases recorded, perhaps 15 per cent. of the subjects used from 1 to 3 grains daily, 15 per cent. used 3 to 6 grains, 30 per cent. used 6 to 10 grains, 15 per cent. used 10 to 15 grains, 15 per cent. used 15 to 20 grains, 7 per cent. used 30 grains, and 3 per cent. used 60 grains. Only four or five persons used the hypodermic method. Some took the drug in two or three daily doses, and some a large dose at intervals of from one to three days. The effects varied very greatly, some persons being stout and rosy, some thin and sallow; but, sooner or later, there were symptoms of disordered nutrition, enervation, and moral degradation. Dr. Earle regards the opium habit not as a disease, but as a vice, though he does not deny that its long continuance will produce a diseased condition; but so also, he says, will alcoholic indulgence, gluttony, tea-drinking, and licentiousness. He quotes the sixth chapter of 1st Corinthians in proof that the misery resulting from the habit is continued after death, and believes it should also be punished as a vice on earth! It is hardly necessary to say that afterward, when speaking of treatment, it appears that he does not adhere to this doctrine of the necessity of the *threefold* penalty, but somewhat inconsistently does his utmost to relieve the patient. Most patients desire to abandon the habit, and it is found that it may be done, with care, with perfect safety to life. Relapses frequently occur, especially if pain or calamity supervenes. The recommencing dose will be small, but the maximum will be quickly reached. Sudden deprivation of the drug Dr. Earle thinks dangerous, from the alarming prostration which occurs. The patient must be absolutely under control of the physician, and must be treated practically as if his word was to be doubted —though some are truthful. The last dose having been taken, he should be searched in a quiet but thorough manner, and any concealed supply removed. He will need a day- and night-nurse, and should never be left alone. It may take four or five days to withdraw the drug, during which time he will suffer little. It is after the last particle is withdrawn that suffering begins, and coryza, diarrhœa, vomiting, muscular pains, and sleeplessness occur. The coryza lasts but a few days, and is treated with carbonate of ammonium, quinine, and cubebs, and a snuff of morphia, bismuth, and acacia. The diarrhœal discharges are dark, and quite painful. Astringents and acetate of lead are to be used. The vomiting comes with the diarrhœa, and is controlled with carbolic acid, bismuth, and ice. The muscular pains are the most troublesome symptom, unless it be the feeling of depression or letting down, which early occurs. The hot bath is useful, and any anodyne not containing opium. Iron, bark, and strychnia are used early and throughout the treatment. Bromide of sodium has been of use. The fluid extract of coca has been found of great use in the late cases in which it has been tried, if the stomach will retain full doses, and enables the morphia to be withdrawn more promptly. In one case, however, there was reason to fear the formation of a coca habit. Sleep usually comes after five or six nights, but in nervous patients chloral or some hypnotic should be given, with caution, lest a habit should be formed. The symptoms are not as severe where the drug has been used hypodermically. A patient will resort to any subterfuge to get the drug, and till several days or weeks have been passed without it, his moral sense is in abeyance, and he can not be trusted. The various "opium-antidotes" in the market are composed of some form of opium, belladonna, cannabis indica, chloral, etc. Dr. Earle believes that physicians' prescriptions containing opium, chloral, or alcohol should bear a printed request to the apothecary not to renew them without direction, and that the greatest caution should be used in prescribing and continuing such drugs. A patient should never be taught to use a hypodermic syringe.

41. In this case of *opium habit treated with coca*, a lady, having begun to use morphia for the relief of pain, at last reached the amount of sixteen grains daily. Thirty hours after having relinquished it, she was found in great agony, excitement, and restlessness. Bromide of potassium and hydrate of chloral were used in large doses through the night, to allay excitement and produce sleep. The next morning she was very weak and restless, scarcely able to speak, troubled with vomiting, and with a pulse of one hundred and fifteen. The fluid extract of coca was given in tablespoonful doses. The first dose produced little effect. The second was followed by a wonderful change; the pulse fell to 85, her face was flushed, the vomiting ceased, her countenance was lively, she talked and laughed quite freely, and in the afternoon was able to sit in a chair. She slept about half the next night, and woke quite lively and refreshed, with a pulse of 75. She enjoyed and digested her breakfast. She continued to improve, in two days took a long drive, and the next day left the city with an eight-ounce bottle of the coca, which she took in smaller and smaller doses, and then, relinquishing it, enjoyed good health without the aid of morphia.

Miscellany.

Ewart on Primary Cancer of the Liver.—Dr. Ewart gives the histories of four cases ("Brit. Med. Jour.," Sept. 25, 1880), for the sake of drawing attention to some points bearing upon its diagnosis. An early diagnosis is important, inasmuch as it may be the means of saving the patient from much harassing and drastic treatment. The difficulty of making a diagnosis is enhanced by the facts that primary carcinoma of the liver usually begins painlessly in the substance of the organ, and that it may attain considerable dimensions before attention is attracted to it. In the first three cases cited it probably existed some time before the glands in the portal fissure became sufficiently enlarged to cause jaundice by compression of the ductus communis choledochus. There is reason to believe that the obstruction of the duct is effected insidiously, gradually, and painlessly. Especially is this accomplished with freedom from pain when the cystic duct is also occluded simultaneously, or soon after the closure of the common duct. In this way the channels behind become, in a measure, reconciled to an excessive accumulation of bile; the urine becomes dark-colored, carrying off the bile absorbed for some time prior to the date of complete obstruction, and so preventing the outward manifestation of jaundice. When the occlusion is perfected, jaundice makes itself apparent in twenty-four or forty-eight hours, and persists, with an intensity increasing in proportion to its subsequent duration, during the brief remainder of the patient's life. When the cancer growths approach the surface, causing intense tension of the capsule and irritation of the superjacent peritonæum, pain is doubtless produced. But enormous enlargement may take place without pain or tenderness being complained of. That a large portion of the parenchyma of the liver may be destroyed gradually and painlessly, is demonstrated in the case of large hydatid cysts, centrally situated; yet a sufficiency of bile is secreted for the wants of intestinal digestion, the support of the blood, and the maintenance of animal heat; so, indeed, within certain limits, it may be with the invasion of carcinoma. The grand distinction is, that, as the growth advances, the malignant or cancerous cachexia is soon developed, with marked and progressive emaciation; and these conditions are much aggravated and intensified if jaundice be present, as is generally the case. It must be recollected that jaundice may occur without pain from enlarged glands due to syphilitic or tubercular growths, or to other causes. The further progress of the case, either toward amelioration or the contrary, will enable the physician to add clearness and precision to the diagnosis during the middle and later periods of life. In most cases, jaundice supervenes about five or six months before death; and, when once developed, it not only never disappears, but becomes more and more marked and intensified. The advent of death is chiefly dependent upon the inability of the kidneys to go on ridding the blood of the bile with which it is being constantly contaminated.

Gairdner on Diuretics in Bright's Disease.—The object of this paper ("Brit. Med. Jour.," Aug. 28, 1880) is to show that, in almost all stages of the disease, there has been an undue tendency to depreciate or exclude the use of diuretics in Bright's disease; and that these, judiciously employed, while they can not claim absolute supremacy, are at once the safest, and in many cases the most effectual means of dealing with the dropsical symptoms; although, as has been pointed out by Dr. Christison, their legitimate function is not merely to get rid of a single symptom, but, by aiding the natural process of excretion by the kidneys, to ward off the dangerous accumulations in the blood which lead in time to uræmia. To restore this natural function by remedies, we must employ methods of elimination that are more or less closely allied in their action to the physiological processes which it is desired to arouse and quicken; and hence the advantage of the use in such cases of the *cream of tartar*, in its solid as well as liquid forms of administration, followed or accompanied by other mild diuretics or by digitalis, a mode of practice extending back to the last century, if not to much earlier periods, and apparently only discredited by prejudices arising from the pathological researches of Bright. The principle of this practice, or the practice itself, ought to be carefully preserved, or restored again more generally and systematically in the treatment of this disease.

Hammond and Inglis on Myxœdema.—Myxœdema is a disease which has for its pathological feature the deposit of a mucoid substance in various parts of the body, especially in the skin; or a degeneration and proliferation of the connective tissue. Probably both these conditions coexist in some tissues. As a consequence of this state, an appearance resembling that of anasarca is produced, with the exception that the pressure of the finger on the part does not leave an indentation. The tissue is resilient and not boggy, like that into which water is infiltrated, as in ordinary œdema. The face has very much the appearance, as far as swelling is concerned, of that which is met with in cases of the toxic effect of arsenic. There is puffiness of the eyelids, the lips are prominent, the nostrils are swollen, and the cheeks over the malar bones are red from capillary congestion. The fingers are "clubbed." The temperature of the body is, in all cases, below the normal standard. Thus far, all the instances of the affection reported have been in adult women, Savage's case of a man being somewhat doubtful. The cerebral and nervous symptoms appear to be very decided. The intellect is notably weakened, and replies to questions are given in a sluggish and inexact way. The memory is imperfect, and the patient experiences a lack of confidence in herself, as regards both mental and physical power. The special senses are more or less perverted, and there are sometimes hallucinations or delusions—in one of Savage's cases, mania. The most ordinary mental condition met with is, however, a lassitude or stupidity, resembling the state generally known as acute dementia. The foregoing is Dr. Hammond's description, adopted from other authorities. In the cases in which post-mortem examinations have been made, the mucoid deposit has been found in abundance throughout the brain, as well as in almost every other part of the body. Dr. Hammond ("St. Louis Clin. Record," July, 1880) agrees with Dr. Savage that the mental symptoms are the result of primary brain disease, probably due to the deposit of the mucoid tissue around the cells of the nervous centers. He gives the details of a case which came under his observation, in which the symptoms of mental derangement appeared before any swelling of the body or limbs was observed, and before any sensory disturbances occurred.—Of Inglis's two cases ("Lancet," Sept. 25, 1880), one was in a male. The histories are given. In his remarks on these he expresses the opinion that myxœdema is primarily a nervous disease, and that the grosser changes in the skin and viscera are caused by deficient absorptive action of the lymphatics, the result of trophic changes in the cells of the higher ganglia.

Lawrence on Infantile Rickets.—The following are Dr. Lawrence's conclusions ("Lancet," Oct. 2, 1880): 1. Rickets, as a disease, is frequently developed earlier in life than is generally thought. 2. The symptoms of the first stage, though frequently recognized, such as sweating about the head and a tendency to lie uncovered, are soon forgotten, and the rickets, the occurrence of which they predicate, meanwhile develops. 3. Between this primary stage and the second stage of well-marked osseous deformity, there are intervening symptoms, to which in practice sufficient value is frequently not attached. 4. In general tenderness, we have a symptom of great value, indicating the onset of the second stage of rickets, being its earliest manifestation. 5. In "beading" of the ribs we have a more marked, demonstrable evidence that the second stage of rickets has begun. 6. In laryngismus, as a neurosis, we have probably one of the earliest evidences that rickets has invaded the nervous system. If these symptoms be overlooked or ignored, our next acquaintance with the disease will probably be in a fully developed, it may be an irremediable, form.

Oltramare on Whooping-Cough.—Dr. Oltramare ("Progr. Méd.," Oct. 2, 1880) believes very firmly in the parasitic nature of whooping-cough, and its treatment with phenic acid. He believes also that the only point at which the parasite can become attached is the pavement epithelium of the back of the throat, although the inflammation caused by its presence may extend to all the adjacent parts, the larnyx and its ventricles, and even the trachea. Starting with this idea—not yet proven, though very probable—he applies to the treatment of the disease a substance of great power in destroying the lower organisms. The formula used by him is the following: Acid. phenic. (cryst.), 1 gramme [15 grains]; syr. menthæ, 40 grammes [10 drachms]; water, 80 grammes [20 drachms]. Of this, three or four drachms are given daily, mixed with a little water. In thirteen patients, in whom the disease was well developed, he has had complete success in ten; in one, the symptoms were modified; and in two, there being no improvement, the treatment was suspended. At the end of four or five days, in the successful cases, the vomiting had ceased, the number of paroxysms had diminished by one quarter or one half; and in the most favorable cases, at the end of the eighth day the cough had lost its characteristics, and was replaced by a slight bronchitis, which speedily disappeared. In two children, aged seven and five years respectively, who were in the fifteenth day of the disease, the amelioration occurred suddenly on the sixth day of the treatment; at the end of the tenth day, the number of nocturnal exacerbations had fallen from eighteen or twenty to two or three. In one child, aged three years, there was a complete cure at the end of fifteen days. In a child of one year the acid could not be administered internally, and the little patient was therefore submitted to a continuous vapor of the drug. A one-to-ten solution of the acid was vaporized, and in this way 120 grammes [1,800 grains] of the crystallized acid were used without incommoding either the child or the nurse, though the odor was very strong. The therapeutic effect, though less rapid, was still marked. The action of the drug is believed to be purely local, and the author thinks that the same results might be obtained by the local use of the drug, or perhaps by other drugs having the same anti-parasitic action.

ARMY INTELLIGENCE.—*Official List of Changes of Stations and Duties of Officers of the Medical Department of the United States Army, from November 14, 1880, to December 13, 1880.*—BROWN, J. M., Captain and Assistant Surgeon. Granted leave of absence for one month, with permission to apply for three months' extension. S. O. 264, Department of the Missouri, December 2, 1880. ═══ COUES, ELLIOTT, Captain and Assistant Surgeon. Relieved from duty assigned him in S. O. 134, July 3, 1876, from A. G. O., and to report in person to the Commanding Officer, Department of Arizona, for assignment to duty. S. O. 251, A. G. O., November 26, 1880. ═══ TAYLOR, M. K., Captain and Assistant Surgeon. Assigned to duty at Fort Wayne, Michigan. S. O. 204, Department of the East, November 17, 1880. ═══ O'REILLY, R. M., Captain and Assistant Surgeon. The extension of his leave of absence on account of sickness, granted him August 16, 1880, still further extended six months on surgeon's certificate of disability. S. O. 259, A. G. O., December 7, 1880. ═══ KING, J. H. T., Captain and Assistant Surgeon. Granted leave of absence for four months. S. O. 253, A. G. O., November 29, 1880. ═══ HOFF, J. V. R., Captain and Assistant Surgeon, Fort Monroe, Virginia. Granted leave of absence for one month. S. O. 208, Department of the East, November 26, 1880. ═══ DE LOFFRE, A. A., Captain and Assistant Surgeon. Relieved from duty at Camp on White River, Colorado, and assigned to duty at Fort Wallace, Kansas. S. O. 269, Department of the Missouri, December 8, 1880. ═══ HALL, WILLIAM R., Captain and Assistant Surgeon. Assigned to duty at Camp on White River, Colorado. S. O. 269, C. S., Department of the Missouri. ═══ TESSON, L. S., Captain and Assistant Surgeon. Granted leave of absence for six months, with permission to go beyond sea. S. O. 244, A. G. O., November 15, 1880. ═══ BREWER, J. W., Captain and Assistant Surgeon. Died November 15, 1880.

⁂ The abstracts given under this head were unavoidably laid over from Dr Katzenbach's "Quarterly Report on General Medicine," which appeared in the December number. We are still compelled to postpone the insertion of several items of interest to the profession.—EDITOR.

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Original Communications.

ON A NEW METHOD OF PERFORMING OVARIOTOMY.*

By E. NOEGGERATH, M. D.

The results of operations for the removal of ovarian tumors have become so very satisfactory with our great gynæcological surgeons, that with many of them success is the rule, failure to save the patient's life the exception; and the question arises, whether it would not be well to continue in the beaten track without trying to modify anything in a method which has led to such glorious results. Certainly, if we could always place the patient as well as the operator under the favorable circumstances that are at the command of our prominent ovariotomists, there would be very little call for further progress.

Since, however, we must attempt to reach even better results, and lessen the number of deaths following difficult and protracted operations, every step directed toward diminishing the dangers connected with laparotomy must be considered in order.

The question of the importance of antisepsis is to some extent a mooted one, as regards its importance during the performance of ovariotomy, a certain number of English and Continental surgeons considering its application as yet an experiment; some even show a tendency to return to the proceeding as it was in use before this our new era.

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* Read before the Medical Society of the County of New York.

Their most weighty argument is the success of former ovariotomists. Now, it is generally acknowledged that the secret of their good results was, aside from the increasing dexterity of the surgeon, the application of most scrupulous cleanliness. What else is antisepsis but an advance in the same direction? While those gentlemen removed all of the visible dirt, we remove also the invisible part of it, its microscopical and living constituents. I, for my part, do not comprehend how this question can admit of any doubt, when we look at the results of modern surgery in general, and at the altered results of ovariotomy in Germany, as well as in this country, since Listerism was introduced.

The latest confirmation of the great advantage of antiseptic operations was brought forward at the last meeting of the British Medical Association, in a paper by G. Yeo and Ferrier. The latter lost all of his animals from uncontrollable inflammation after his well-known experiments in reference to cerebral psycho-motor centers; while, of the last twenty-six cases of cranio-cerebral lesions, produced under antiseptic precautions, in only one, the first one, did the animal die, and in that case the antiseptic method was discontinued during the operation.

One of the many advantages of this method of operating consists in the fact that patients do now recover in the hands of unskilled and inexperienced operators that would never have recovered without it; but it must be the aim of our ovariotomists to surround the operation with such safeguards that, more and more, surgeons, and not gynæcologists proper, shall feel no hesitation in performing this operation.

The question is again being discussed at the present time whether ovariotomy performed under the spray, without other very strict antiseptic precautions, or whether careful antiseptic treatment of everything connected with the surgeon and the patient, without the use of the spray, or whether a combination of both, should be resorted to. From what I have seen in my own practice and in that of others, I have come to the conclusion that, the more extensively antisepsis is applied, and the more varied is its use in a single case, the greater are the chances of recovery. Let me point out one advantage of the generalization of antiseptic measures. It requires a good deal of personal experience to have your mind trained so as to commit no error before, during, or after the operation, and I have repeatedly seen gentlemen, in the habit of operating antiseptically, sin against the rules of Lister, as, for instance, in the handling of instruments or sutures. Now, if under such circumstances the operation is successful, after all, it is owing to the fact that numerous other precautions, executed faithfully, render one or two inaccuracies comparatively harmless, although the temperature during recovery will show that sepsis exists to a minor degree. I therefore consider it the safest policy to disinfect everything surrounding the patient, and, if possible, by different agents.

If we should not succeed in gradually working out a plan by which patients may be operated upon safely in their homes, or in the hospitals spread over the country, we ought to send every case of ovariotomy to one or the other central points, where all the circumstances are made so to coöperate that the life of the patient is as safe as possible. One great advantage of these centers of science and wealth is the institution of isolating wards or cottages, designed exclusively to receive patients during and after the operation. That they present surroundings in the best possible condition is evident. The air in them is more guarded against contamination with septic material than in most other localities in which ovariotomies are performed.

Now, the question arises, whether it be possible to make a room in a dwelling, or a private room in a hospital, as salubrious as one of our cottages. I believe I can answer in the affirmative, at least as regards the time during the operation and the next few days following. Let me give you a short description of the manner in which I attempt to attain this object in a private house. If I can have them, I select two rooms—if not, one—on the first floor; and begin with the removal of the carpets, all of the furniture, pictures, looking-glasses, bureaus, etc. Now the floor, walls, and ceiling are washed, first with water and then with a two-and-a-half-per-cent. solution of carbolic acid, on the day preceding the operation, after which vessels containing chlorine water are placed in the rooms and in front of the doors. The wash-closet, if any be present, is hermetically sealed up, all the water to be used afterward to be carried in from without. The mattresses have meanwhile been aired; and the bedclothes, the suit or suits which are worn during and after the operation, and the towels have been washed in carbolic-acid solution. On the evening preceding the operation, all of the last-named articles, with two wooden tables, a chair, and an iron bedstead or a stretcher, are placed in the room. All the windows are closed, and a piece of sulphur is burned for about half an hour. The outer dress of the nurse is also disinfected. After the operation, the room is heated by a grate fire, and a kettle containing carbolic-acid solution is suspended so near the fire as to produce enough evaporation to have its presence remarked when you enter the room. The nurse leaves and enters the same only through the adjoining chamber, which is exposed to the air day and night. Thus conditions are presented which closely resemble those of an isolated cottage.

Now, suppose everything is thus prepared, and the ordinary rules of antisepsis are carried out during the operation, what dangers have we to battle against? Excluding all unusual incidents, such as exhaustion from fatty heart or arterial sclerosis, tetanus, and strangulation of intestines, there remain three principal sources of danger: 1, hæmorrhage; 2, shock; 3, septicæmia—each alone, or several combined, constituting the most frequent cause of death. Regarding the avoidance of the first as a single cause, I have nothing to add to what we know from the teachings of our ovariotomists. We now come to the question, how to avoid shock, not only shock so severe as to become in itself a grave danger, but shock as a complication with other dangers following the operation. We know now from G. Wegener's classical monograph on peritoneotomy, that in animals shock is equivalent to loss of temperature. Since the publication of Wegener's paper, I have followed up the accounts of cases of ovariotomy published in the journals, and have measured the temperature in my own cases. The number of instances where shock was mentioned, and the temperature was measured, has been very small, but in all it has sunk considerably below the normal; in one instance down to 97° F., in another even to 94° F. I have had very little occasion to measure shock temperatures, owing, I believe, to my method of operating. In the single case in which I have had a chance to do so, the thermometer showed 96° in the rectum. We must therefore assume that, in man also, the principal element of shock is lowering of temperature. No wonder, if we consider that in operations with the large section a surface is exposed which almost equals that of the entire skin. Another element in the production of shock is the prolonged contact of the contents of the abdomen with fingers, instruments, etc., and their unavoidable dislocation, a fact also proven by experiments on animals. If we add to these the influence of narcotism, with its paralyzing effect upon the heart, its well-known tendency to lower the temperature of the body, and the injurious effect of vomiting, which adds to the mechanical insult offered to the viscera, I think I have enumerated all the circumstances, a combination of which renders laparotomy dangerous from this source.

To begin with the last, I will give a short account of the manner in which I attempt to counteract its ill effects. After a long trial with the several narcotics, I have returned to the use of chloroform: first, because I have failed in a number of instances to produce deep and uninterrupted sleep with ether; secondly, because nausea, vomiting, and coughing during and after the operation have been less frequent after the use of chloroform. The only death which I have had to deplore followed the administration of ether in a case of fatty degeneration of the heart, the presence of which could not be revealed by auscultation. The patient, who had undergone a previous operation for the same lesion, prolapse of the vagina and uterus, recovered very satisfactorily the first time from the effects of chloroform.

A patient to be operated upon in the afternoon of a certain day is ordered to take, on the previous day and the one preceding this, one drachm of bromide of potassium, and, on the morning before the operation, thirty grains of the salt. This plan was proposed many years ago by Dr. Lente, and I have followed it with very satisfactory results ever since. The patients require less of the narcotic, the period of excitement is considerably diminished, the sleep is more natural, and vomiting is less frequent than without it. For the last two years, however, I have added another safeguard, which consists in the administration of one or more doses of thirty grains of chloral, per rectum. In experimenting with chloral upon rabbits, it has been found that emetics fail to develop their physiological effect so long as the animals are under the influence of the drug. It has been further proven this year, by the experiments of Renier and Richet, that the use of chloral considerably diminishes the shock produced by injecting irritating substances into the abdominal cavity. Since I have been in the habit of employing bromide before and chloral after ovariotomy, vomiting has been an extremely rare occurrence.

Ovariotomists have long been in the habit of performing the operation in a room, the air of which was moistened and heated. The idea which led to this precautionary measure was the result of an opinion that the cooling of and evaporation from the exposed peritonæum would aid in developing peritonitis. From this point of view, we may safely do without it, since we know that peritonitis is not the danger that we are trying to avert. And yet we can not abandon it, since one element of shock is lowering of temperature. We know now that the temperature of the body sinks the very moment the abdominal cavity is opened, and that it decreases in a direct ratio with the length of the incision, the area of intestines exposed, and the time consumed in the operation. Now, every one of you who has assisted at an ovariotomy must recollect the depressing influence of an atmosphere heated and loaded with aqueous vapor. The pulse becomes accelerated and the nervous system loses vigor of action. But there are other objections to this mode of applying heat. First, it can never be kept at an equable rate around the patient herself; currents of air must enter the room from without, attracted by the heat, and a large portion of it is displaced in the neighborhood of the patient by the draught occasioned by the cold spray. I have therefore modified this mode of applying warmth to the body, by placing my patients on a rubber bed filled with water heated to 100° or 102°. This has many advantages over the other plan; dry heat is much less depressing than damp heat. I can convey it to the body in just such a dose, of unvariable strength and duration, as I desire. Whatever temperature may be lost by exposure or by the cold spray is constantly supplied anew from this source. But it has another advantage over the old method, namely, its effect on the reflex centers in the spinal marrow. We are all acquainted with the effects of Chapman's spine-bags—the cold one produces hyperæmia, the warm one, a condition of anæmia, in the abdominal organs, in consequence of their influence on the molecular movements within the vaso-motor nerve centers. It was found, in the experiments of Dr. Wegener, that in opening the abdominal cavity the arteries, as well as the veins, of the abdominal organs, but especially those supplying the intestines, became hyperæmic.

This he considers partly as a consequence of lessened intra-abdominal pressure, partly as resulting from paralysis of the smooth muscular fibers from exposure to cold. This hyperæmia of the intestines, however, admits of another explanation. It can be produced artificially without opening the abdominal cavity any length of time. Goltz saw it occur as one of the phenomena of his famous concussion experiments, while von Bezold and Bever succeeded in producing it by section of the splanchnic nerves. These experimental researches lead us to consider the abdominal hyperæmia to be an essential element and a direct consequence of shock. If we include with the reflex paralysis of the other vaso-motor system that of the splanchnicus, in consequence of traumatic insult, all the phenomena are explained; the patients are pale, the brain has become anæmic, the heart contains little blood, but the venæ cœliacæ, meseraicæ, etc., are filled with it. We can therefore measure to a certain extent the degree of shock which is developed during ovariotomy by the amount of hyperæmia found inside the abdominal cavity. My attention has been directed to this point for several years past, and I have observed that, even in operations where the viscera had been exposed more than an hour and a half, the abdominal blood supply has not apparently been larger than in the normal state, since I have operated with my patients on the hot-water bed. But this was not the only symptom of the existence of a very slight degree of shock. In operations which were protracted and very severe from the amount of handling of the pelvic viscera, the color of the face remained natural, the pulse was large and soft, and when the operation was finished the pulse was between seventy-two and eighty beats in the minute, a phenomenon which I have often demonstrated to the gentlemen present.

The third and most important danger connected with ovariotomy consists in the formation of septic material in the abdominal cavity after the operation; but it is evident that, besides surrounding the patient with all the safeguards mentioned above, it must be the effort of the surgeon to allow as little septic matter as possible to come in contact with the serous membrane. Our purpose would be attained most effectively if we could considerably lessen the space and time during which the air, hands, and instruments come in contact with the peritonæum. This object is certainly far from being reached by the method of operating now usually employed.

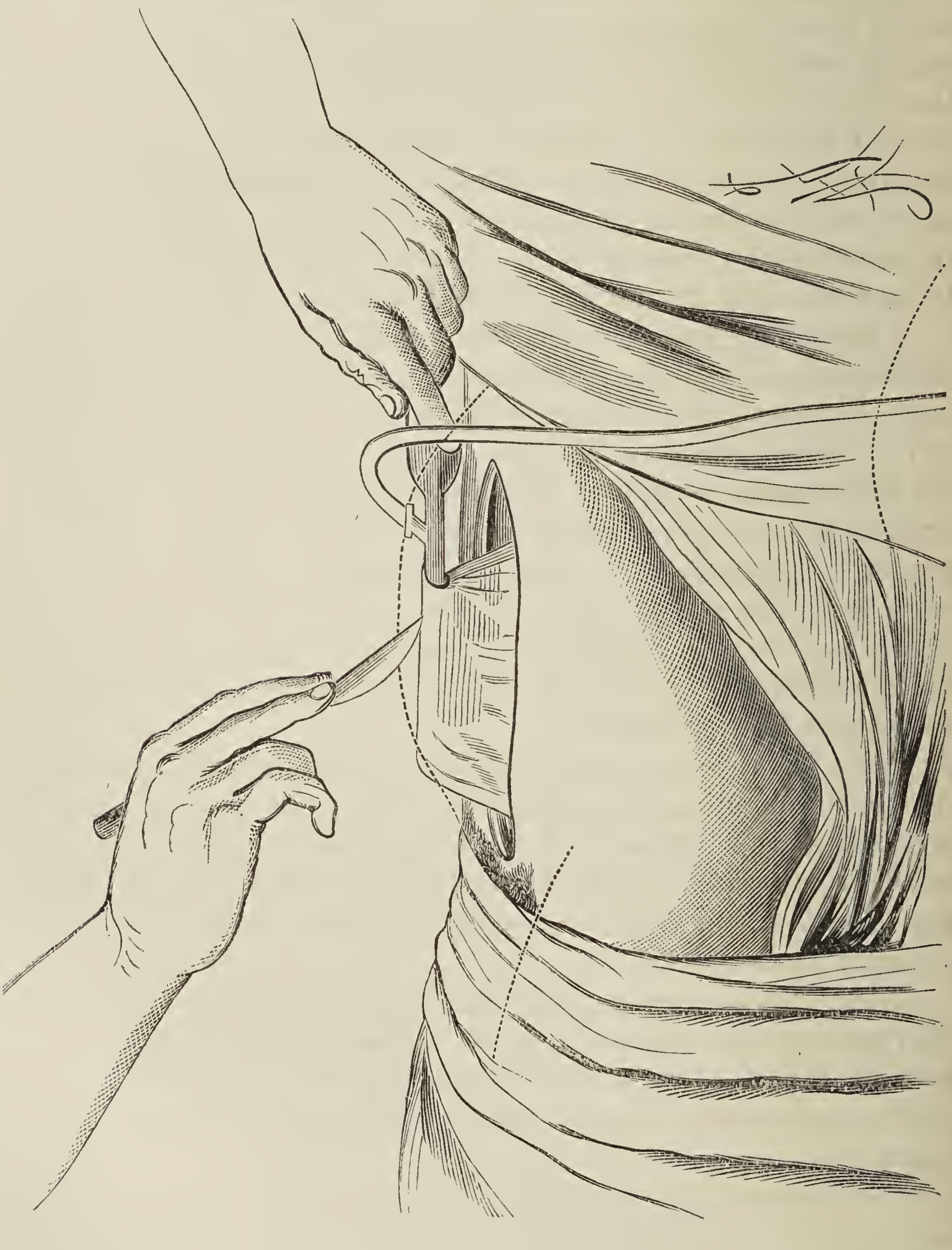
I quote the words of Kœberlé, published in his article, "Des Maladies des Ovaires et de l'Ovariotomie," written for the "Nouveau Dictionnaire de Médecine et de Chirurgie," Paris, 1878, p. 567: "After having divided the subperitoneal layer of fat-tissue, the peritonæum is grasped with a forceps and opened. Then two or three fingers are introduced into the incision, between which it is gradually enlarged, etc." After this he goes on to state that adhesions encountered by the fingers in the abdominal cavity yield easily, as a rule, to moderate pressure, and says: "After having rapidly explored the anterior surface of the cyst with the fingers, the same is now punctured."

Now, this is a very concise and correct statement of our ordinary method of operating in uncomplicated cases. If, however, we meet with extensive adhesions, it is the rule to pass a large sound or the whole hand between the tumor and the peritoneal surface, separating those that will yield, and treating the more solid ones by other well-known methods.

Now, this proceeding, handed down to our generation by the very first ovariotomists, is open to a great many objections, if we consider it in the light of the principles which govern the surgery of the present day. I have therefore adopted a different plan of operating.

I commence by incising the skin, the subcutaneous layer of fat, and the fascia superficialis to the extent of about three inches. Instead of going on incising the tissues down to and through the peritonæum, I plunge the trocar at once into the cyst and empty it out.

If I find that the liquid is bland, I proceed with the operation; if it should contain pus, decomposed blood, or dark, grumous fluid, I inject through the tube attached to the trocar about half as much of a two-and-a-half-per-cent. solution of carbolic acid as the fluid measured when removed. This is allowed to remain in the cyst for a while, and is then withdrawn. It is done in order to remove the possibility of infecting matter passing from the cyst into the abdominal cavity during the further progress of the operation.



After the cyst is fully emptied, I depress the handle of the trocar toward the skin below the umbilicus, thus carrying all that section of the tumor which lies below the opening of the trocar against the anterior abdominal wall. Now the up-lifted portion of the latter is incised upon the trocar as a guide down to the cyst wall, which is lifted up and out of the peritoneal cavity by the instrument inside it, after which the pedicle is tied and the cyst removed.

The advantages of this proceeding over the ordinary method are the following:

1. It simplifies the operation considerably, since the search for and separate opening of the serous membrane are entirely done away with, thus removing the principal difficulty connected with that part of the operation which precedes the opening of the cyst itself.

2. The chances of air, instruments, and hands, contaminated with septic material, entering the abdomen are considerably diminished—partly because the time during which the peritoneal cavity is exposed to their contact is shortened by just so much as it takes to empty out the sac; partly because the cyst collapses before the cavity is opened, and the suction originating from the inequable contraction of the sac and the abdominal walls is entirely done away with.

3. The chance of noxious contents of the tumor running into the abdominal cavity is very much less as compared with the ordinary proceeding, and they can be rendered harmless by previous disinfection.

4. The opening in the peritonæum is, on an average, smaller than with the old method, it being adapted in every single instance exactly to the requirements of the case. After a small section of the cyst, say an inch of its surface, is laid bare, and traction is exerted upon the same by the trocar, the length of the succeeding incision is determined simply by the thickness of the cyst wall, since the further enlargement of the wound is done while the sac is being lifted out gradually, and stopped the moment it is entirely outside.

5. The shock which results from laying open the abdominal cavity is shortened by just so much time as it takes to empty out the cyst, the greater part of the operation being reduced to that of simple tapping.

The question naturally suggests itself, To what extent is this method applicable? With my present experience, I know of only two contraindications: 1. A preponderance of the solid over the liquid portion of the tumor, or where the whole mass consists of very small cysts or semisolid contents, too thick to pass through the cannula. 2. A small sac, either originally so or reduced by previous tapping—on account of the danger of encountering a loop of intestines in front of the cyst. The latter condition can always be recognized; not so the former, not even after previous tapping. I met such a case on the 23d of November last, in a patient at the German Hospital. She had been tapped in the summer of the same year, by another physician, and a large quantity of fluid had been removed, after which the cyst had collapsed. I therefore commenced the operation in the manner described, but, to my surprise, a very small quantity of fluid only escaped through the cannula, and the tumor did not show any signs of diminishing in size. I left the trocar in the mass, and proceeded with the operation according to the old method, and, after having opened the abdominal cavity and turned the patient on her side, the trocar was removed, its track was enlarged by the knife, and finally the cyst, half of which appeared to be a solid mass, was withdrawn. I mention this case to show that, if anything unusual should occur after commencing with my proceeding, it can be interrupted at any step, and the operation finished after the ordinary method. A third possible contraindication would be the presence of ascites. I have had no occasion to test this question practically.

At first sight, the presence of adhesions might be taken for a grave objection, considering that they may be separated easier and with less harm from a more solid, resisting surface, by passing the finger between them, than from a collapsed membrane. There is another consideration connected with this subject, namely, that where adhesions have been found too extensive or connected with important organs, the operation should remain limited to an exploratory incision of the abdomen. As regards the latter objection, all the difference would be, that the cyst would have been emptied out before instead of after the incision, because, even if an operation were not to be finished according to the older plan, every surgeon would empty out the cyst, if only for the temporary relief of the patient.

I have met, during the many operations performed after my method, with the ordinary run of adhesive inflammation, its products extending to the omentum, the lateral parietes, anterior surface, and spreading far into the pelvis. I have found no difficulty in separating them, one after another, from the collapsed sac. I will say more. It was in a case where, from the amount of previous inflammation and immobility of the sac after tapping, I suspected adhesions, and found them on dissecting up the integuments and into the thickened peritonæum, that I first conceived the idea of emptying out the cyst as the first step of the operation, dreading in this case that the forcible separation of them might rupture the sac and allow its contents to pass into the abdomen.

Of the twelve patients upon whom the operation has been performed, three died and nine recovered. Numerically, this is a small percentage of recovery. But, if we analyze the circumstances connected with the ill-success, the matter will assume a somewhat different aspect. Of the three patients who died, one was forty-five, one seventy-one, and one seventy-five years old. The two latter had evidently atheromatous degeneration of the arteries.

The former was operated on May 13, 1880, in the Mount Sinai Hospital. Only four fifths of the cyst could be removed, on account of adhesions to the spinal column and the true pelvis. The ligature applied to the remaining mass, which I intended to treat according to the plan of Dr. Atlee, was what is known as the Staffordshire knot. It slipped, and, before another one could be applied, a fearful hæmorrhage occurred. The patient lived only three hours afterward.

The other patient, seventy-five years old, operated upon in the German Hospital on May 12, 1878, did very well the first few days, when she began to sink, with very slight rise of temperature, and died three days after the operation. Post mortem, it was found that there had been oozing of blood from the pedicle, not to any very large amount, but enough to produce a localized solid exudation in the neighborhood of the stump.

Of the ten remaining patients, only one died, in consequence of hæmorrhage during the operation. She was operated upon on October 18, 1880, in the Mount Sinai Hospital. The source of bleeding was a small, soft sarcomatous tumor hidden away in a pouch of the adherent cyst. The operation was not finished, on account of collapse from anæmia. It was the case of which I have given a detailed account in the "Transactions of the New York Obstetrical Society," which was further complicated by the fact that the bladder was drawn up nearly to the umbilicus, and attached to the parietes, as well as the tumor, in such a manner that its incision could not be avoided during the operation.

Consequently, of the eleven cases in which the operation was finished, all the patients below the age of seventy-one years were saved; and they were not picked out, some of them presenting even unusual difficulties, especially two of them. One, a private patient, Mrs. B., was operated on November 2, 1878. It was a myxomatous cyst of the left ovary, which had developed into the broad ligament. The pedicle was consequently formed partly by a section of the cyst. In similar cases, it is the rule always to carry it outside, and treat the case by careful drainage. I was, however, so sure that antisepsis had been carried out to the utmost degree of completeness, that I tied the stump with three ligatures placed in a row, one by the side of the other, and dropped it. The febrile reaction after the operation was so slight that the highest temperature recorded between the 2d and the 14th of November was 99·5° in the axilla, on the second and third days after the operation. From 12 M. of November 4th, it fell to 98·5°, and kept between this and 99° during the following two weeks.

Before proceeding to describe a new method of after-treatment, I will state that in ordinary cases I leave my patients for the following week on the water-bed, which I now fill with cold water as soon as a rise of temperature calls for antipyretic measures. I have found it as efficient as Kibby's cot, and it has the great advantage over the latter, that its use puts less strain on the nurse, and causes less disturbance of the patient. Should symptoms of nervous depression, or even collapse, begin to develop, it can be filled again with hot water, and thus its stimulating effects called into action.

The after-treatment properly begins at the time when the cyst is being severed from its pedicle—that is to say, we have at this moment to decide whether the peritoneal wound, namely, the peritoneal cavity, is to be treated as an open wound, or to be closed. Gentlemen acquainted with the literature of this subject must be aware, through the article of Knowsley Thornton, published in the "Medical Times and Gazette" for May 22, 1880, where all the different methods of treatment of the pedicle are most carefully discussed and sifted, that I am in favor of the complete intra-peritoneal ligature. The only other alternative, so far known, is the treatment of the pedicle by the extra-peritoneal method either with or without draining. At the present day, confining our remarks to ovariotomy, the only other method to be considered is that of drainage. Although we all admit that this question regarding the treatment of the pedicle is so far settled that in the large majority of instances the intra-peritoneal method is the one to be chosen, there remains a certain percentage in which drainage is the only proper treatment.

I should exceed the scope of this paper, were I to discuss the indications for the use of the drain. All I want to state is the conviction that drainage of the pelvic cavity, as it is practiced by our surgeons nowadays, no matter of what shape or material the tube is made, is a source of great danger.

The only reasonable method of draining the abdominal cavity is that proposed and performed with great success by Dr. Bardenheuer, of Cologne. I have been present at quite a number of post-mortem examinations, where death followed after the use of the drain, and there were evidently two causes of this ill-success. In one set of cases the pelvic cavity proper was thoroughly drained, while the supra-umbilical portion of the abdomen was full of decomposed fluid. In another number of instances the parts in the immediate neighborhood of the drains were thoroughly clean, while to the right and left were deposits of offensive pus formed in pouches and separated from access to the drain by adhesions formed after the operation. I have therefore employed a new method of after-treatment for cases where drainage is the method indicated. It consists in the use of the permanent full warm bath, the water being allowed to come and remain in contact with the peritoneal cavity. Let me give you the history of the first case in which I employed it.

Mrs. Rosalie H., forty-two years old, was admitted to the Mount Sinai Hospital in November, 1879. Patient had been married three times, but had never had any children. A year and a half before admission she noticed a small, hard mass in the left iliac region. It grew steadily without causing any pain, until about three months ago, when she began to experience a great deal of distress and a sensation of chilliness followed by fever twice daily. Notwithstanding the great amount of suffering, she appeared to be robust and even unusually stout. The abdomen was filled with an elastic, indistinctly fluctuating tumor, composed apparently of two cysts with thick walls. On examination, the tumor was found to be adherent to the uterus, as well as to the entire pelvic cavity. I began the operation on January 13, 1880, with the conviction that I could only remove part of the tumor, on account of the intimate connection of its lower portion with the surrounding organs, and so it proved to be.

I had to cut away the upper three fourths of the mass, and leave the rest inside. The walls were in some places two inches thick. In order to avoid hæmorrhage, I inserted two sets of ligatures, each about an inch from the other, and tied the proximate threads of silk before cutting away the tumor above. The denuded surface in some places showed arterial openings of the size of the ulnaris. By this process, however, the operation became so protracted that I severed the second half of the tumor with Paquelin's cautery, and constricted the tissues with sutures wherever they showed a tendency to bleed. In view of a possible secondary hæmorrhage, I did not cut the silk, but left it hanging outside the wound, of which I closed the upper part, leaving the lower angle open wide enough for the admission of two rubber tubes of large caliber, one resting in the sac, the other behind it, in the abdominal cavity.

Now, after the operation, the condition of things was as unfavorable as could be for a recovery. I therefore had the patient transferred immediately from the operating table into a bath-tub, filled with water heated to 100°, to which was added enough common salt to make not quite a one-half-per-cent. solution, and a small quantity of salicylic acid. After three hours, when Mrs. H. had fully recovered from the effects of the chloroform and of the protracted operation, the temperature of the bath was allowed to fall to 96°, and was never allowed to reach below 94° during the whole treatment. The water in the bath remained remarkably clear for the first few days, but was entirely renewed at least once a day. The patient felt comparatively well during her stay in the water, complaining only of a pricking and itching sensation in the skin. She slept a good deal, with the help of morphia, and was fed per rectum in the water during the first few days. The temperature was taken regularly in the mouth, and it was never found to have exceeded 100°; the pulse, however, was rapid, usually 120 beats in the minute. On the sixth day diarrhœa set in, and she was taken out of the water. When in bed, the wound, as well as the tubes, was found to be perfectly clear; not a drop of pus to be seen; but it was only twenty-four hours after the removal from the bath that suppuration began to set in, which, however, was not accompanied by any rise of temperature.

The upper part of the wound had parted to a certain extent, and a piece of colon, of the size of a small fist, was found partly outside the abdominal wall, not at all discolored, but covered by a thick layer of lymph, which also had produced such a firm union between the sides of the intestine and those of the wound that it could not be replaced without using a great deal of force. It was therefore attempted to draw the lips of the gaping wound together over the intestine by means of adhesive plaster, hoping that time and pressure would bring about absorption of the deposit which glued the intestine to the wound. This, however, was found to be of no avail. Therefore, on the third day after the removal from the bath, the patient was anæsthetized, the adherent intestine was forcibly separated with the finger, and pushed back into the abdominal cavity, and the wound was closed by metallic sutures. No inflammatory reaction followed, and union took place very rapidly. The tube in the sac remained *in situ* at the lower angle, while that leading into the abdominal cavity was removed at the time of the replacement of the intestine.

The discharge from the sac remained copious, and was for some time very offensive. The last tube was removed two months after the operation, the discharge being considerably lessened in quantity. Two months later the patient was discharged, and in three weeks the last two ligatures came away. The mass remaining in the pelvis had been shrinking all the time, until at last it could only be felt as thickened tissue lining the walls of the fistule.

I feel it my duty here to state that the success in this case, as well as in the others treated at Mount Sinai Hospital, was owing in a very great measure to the untiring and intelligent services of the House Surgeon, Dr. H. L. Estes.

The bath used for treating patients after ovariotomy, in its now perfect state, consists of a large tank made of boiler-iron, joined and riveted like a steam boiler, having beneath it a chamber, of about two inches in depth, for the reception of steam, in order to maintain the temperature of the water at an equal rate without such frequent changing as would otherwise be necessary. All along and outside its upper border are projecting iron pegs, for the purpose of attaching a hammock, on which the patient lies in the water. The bath is connected with the hot- and cold-water pipes, and also with the steam pipes. The hot and cold water, conducted in from above at the foot of the bath, is made to mingle in one common pipe before entering the tub, so that it can neither chill nor scald the patient as it runs in. The steam is admitted to the lower chamber by a small pipe at the head, with a stopcock so arranged that the amount of steam can be regulated as desired. The bath, thus constructed, is so perfect in its action that it requires very little nursing. In the last case which I treated in this manner, the steam supply had only to be regulated three or four times a day.

Although it is desirable to have a bath as complete as the one described, it can be very well supplanted in a private dwelling by a common movable bath-tub with a double bottom, the latter for the reception of hot water. In the first case, described above, I did employ such a bath-tub, since the stationary one was not yet completed. It is, however, necessary for our purpose to employ a bathing arrangement in which the water can be maintained at a certain temperature without the frequent additions of fresh hot water.

Let us now consider for a moment why the perpetual contact of water acted in such a manner as to prevent sepsis. I will here mention the fact that warm water has been employed from time to time by surgeons in the treatment of wounds, especially lacerated wounds; but within the last year Verneuil has again called attention to its healing influence in wounds of the hand, arm, feet, etc., which showed signs of, or threatened, destructive suppuration. The theoretical explanation, found out by experiments, consists in the fact, established by Wernich ("Berl. klin. Wochenschrift," Nos. 4 and 5, 1880), that water in abundance is one of the most potent agents for destroying bacteria. With all this knowledge, however, and with our hereditary dread of inflammation of the peritonæum kindled by the presence of a foreign body, it seemed to be risky to employ it in the manner described. And what *was* the result? A general peritonitis—but, an antiseptic one. While reopening the abdominal cavity, in the case above described, the entire peritonæum was found covered with a layer of organized exudation, of a clear yellowish-white hue; and while this process was going on the temperature of the patient never rose over 100°, proving the absence of septic poisoning. This is no accident; in the other cases which I have treated in the same manner, the temperature was barely affected, although symptoms of exhaustion and anæmia in a more or less marked degree were perceptible. Under the circumstances, it would, however, be a misnomer to call this condition of the peritonæum an inflammation; there was no redness or heat, and, if anything is apt to strengthen the views on surgical inflammation as they are being worked out at the present day, it would be this experiment of submerging the entire peritonæum under water, and observing the development of what is usually called inflammation going on under absolute seclusion from septic contamination. What occurs here is nothing but a physiological process, that of exosmosis—a weak salt solution on one side, a natro-albuminate and solution of fibrine on the other; between both, a thin animal membrane, the peritonæum, and the coat of capillaries.

Now, if we were to attempt to add to the water other constituents and salts, so as to make it resemble exactly the blood serum in its diosmotic properties, we should probably not obtain the favorable results that occurred in our cases. First, it is questionable whether the fluid would remain as aseptic as almost pure water, and, above all, we should not have this exudation all over the peritonæum—a condition which we desire for the time after the patient has been removed from the bath. It blocks up the many thousands of lymphatic stomata, and is a barrier against absorption of decomposed material that may form afterward, as it is very apt to do in these cases. Without this exudation, the reopening of the wound leading into the peritonæum and the replacing of the intestine would never have succeeded as it did in the case of Mrs. H., without calling forth the slightest inflammatory reaction.

The number of cases I have treated with the bath is too small to shape any final indications for its use. I know, however, already of one contraindication, and within its scope are comprised patients with weakened constitutions. The drain on the system from loss of serum and fibrine is severe. I propose to employ the permanent bath as a substitute for ordinary drainage in ovariotomy, and, above all, after Freund's operation, after the removal of fibroid tumors, and after Cæsarean section. I will further state that in the bath an abdominal fistula, an inch and a half in length, from which all of the solid fæcal matter was discharged for weeks, was closed in four days and a half so thoroughly that no fæces were afterward discharged through it after the patient was removed from the bath.

ON THE METASTASES OF INFLAMMATIONS FROM THE EAR TO THE BRAIN.*

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Fallopius is reputed to have been the author of the strange teaching that a discharge of pus from the ear of a child should not be interfered with, because, as he reasoned, this discharge is an effort of Nature to throw morbid material out of the head through the ear. In the light of modern investigation, we can see the folly of such teaching, and the danger with which the following of it must necessarily be fraught. The opinion formerly pretty widely spread, that, "as a general thing, nothing can be done for ear patients," has but few adherents now. Nevertheless, the treatment of disease of the ear does not receive the attention it should at the hands of general physicians; and it is to their care, more particularly, that are intrusted the diseases in the course of which certain ear troubles are developed.

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* Read before the Richmond County Medical Society.

In a paper,* published a number of years ago, by the late Professor Edward H. Clarke, of Harvard University, is contained this very striking sentence: "So important is a proper attention to the ear during and after the acute exanthemata that a physician who treats such cases, and neglects to give this attention, can not be said to perform his duty to his patient." Professor v. Tröltsch has referred to this passage in a recently published petition to the German Government, asking that candidates for the degree of Doctor in Medicine be required to qualify themselves in otology; and it is evidently his opinion that, even in Germany, the importance of the treatment of ear disease is not sufficiently appreciated by physicians in general. There is a series of every-day disorders, such as cold in the head and angina, which rapidly spread from the naso-pharyngeal mucous membrane to its continuation, the mucosa of the ear. The fact is familiar to every medical man how frequently ear affections develop in the course of influenza, diphtheria, whooping-cough, scarlet fever, measles, small-pox, typhoid fever, and tuberculosis of the lungs. Further, scrofula and constitutional syphilis play an important rôle in the etiology of aural diseases. Von Tröltsch asserts that aural disease is among the most frequent ailments incident to childhood.

If the dangers resulting from aural diseases be compared with those produced by eye diseases, it must be acknowledged that the former are preëminently the more pernicious. The same disease which, later in life, causes simply deafness, or difficulty of hearing, when it occurs in very young children, prevents the development of the faculty of speech, or, if the child can already speak, it may still cause the loss of the same. In both cases the child will be deaf mute. Von Tröltsch † estimates that, of 38,489 deaf mutes in Germany, in 15,000 the affection was acquired; and that in one fifth, or 3,000, of these cases, early and energetic treatment of the aural affection would have prevented the occurrence of mutism, and preserved a large portion of the hearing power.

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* "Am. Jour. of the Med. Sci.," Jan., 1858, p. 28.

† "Archiv f. Ohrenheilk.," xiv, p. 151.

It is true, there are many cases of ear disease that are not amenable to treatment, especially chronic catarrh of the middle ear, which has run its course with few disturbing symptoms, lasting for years, and for which assistance is sought for the first time when disorganizations, etc., have been established in the tympanum ; but, even in a large number of chronic affections, great assistance can be rendered, and the production of still further mischief averted. Still more serious results may be developed from suppurative inflammation of the ear : it may be followed by abscess of the brain, phlebitis, pyæmia, and other infectious and metastatic diseases, more particularly acute tuberculosis.

This migratory preface brings me to that portion of my subject which it is more particularly my intention to dwell upon. It has been recognized for a long time that purulent otitis might give rise to caries of the temporal bone, and through this process lead to fatal disease of the brain. Until late years, this caries has been the only recognized cause of the extension of the inflammatory process in the ear to the brain. Indeed, Orth, in his recently published work on "Pathological Anatomy," states that caries is almost the only affection for which it is necessary to examine the inner ear. However, from the dissection of pathological specimens, we have learned that disease of the ear (purulent otitis) may prove fatal, even in adults, without there being any externally appreciable disease of the temporal bone, by purulent meningitis,[*] or phlebitis of the sinuses and pyæmia ;[†] and that this may occur without perforation of the drum membrane.[‡] This latter circumstance, Schwartze[§] declares, can only take place when the drum membrane has been increased in thickness and power of resistance by previous inflammatory processes. However, in Green's case, the membrana tympani was not only entire, but apparently healthy, of normal transparency and thickness in every part below the small process of the hammer ; the case, moreover, differed from the other cases mentioned, in that the caries communicated with both the meatus auditorius externus and the brain—this communication taking place through a sinus in the

[*] Schwartze, "Archiv f. Ohrenheilk," i, 1864, p. 200 ; and iv, 1875, p. 235, case i.

[†] Gruber, "Wien. Wochenbl.," 1862, 24, 25.

[‡] Von Tröltsch, "Anatomie des Ohres," p. 70. Schwartze, "Archiv f. Ohrenheilk.," p. 200 ; ii, 1867, p. 287 ; iv, p. 235. L. Mayer, *ibid.*, i, p. 226. Pagenstecher, "Archiv, f. klin. Chir.," iv, p. 531. J. Orne Green, "Trans. of the Am. Otol. Soc.," 1871, p. 69, case v.

[§] H. Schwartze, Klebs's "Handb. d. path. Anat.," ii, p. 79.

upper osseous wall of the meatus, just above and external to the small process of the hammer.

We now know that the ear is in most intimate connection with the brain; that the petrous bone is perforated with numerous small foramina, through which an inflammation of the ear may be propagated to the brain and other important parts. The entire upper, posterior, and anterior surfaces of the petrous bone lie in direct contact with the meninges of the brain, being covered by the dura mater, which here serves as its periosteum. Part of the anterior surface forms the roof of the tympanic cavity proper. This roof varies in thickness; it is not infrequently so thin as to be nearly transparent. The floor of the tympanic cavity is formed by the jugular fossa, in which lies the internal jugular vein. This floor is frequently exceedingly thin; it contains an aperture for the passage of the auricular branch of the pneumogastric nerve. In one of my specimens, the floor of the drum cavity contains two large openings, the result of an arrest of development. In such a case, the coverings of the jugular vein would lie in direct contact with the mucous membrane of the tympanum. Part of the anterior wall of the tympanum is formed by the carotid canal, and is so thin that light passes readily through it; it is, moreover, perforated by minute openings, for the passage of the tympanic branches of the sympathetic.

The lateral sinus and the tympanic cavity proper are separated from the mastoid cells only by a thin lamella of bone, which contains a variable number of foramina opening directly into the cells. The facial canal, as it passes through the tympanum, is never separated from that cavity by more than a very thin plate of bone, and frequently, from an arrest of development in the latter, lies in direct contact with the mucous membrane lining the tympanum. The internal auditory canal, lined by a prolongation of the dura mater, leads from the cavity of the skull to the labyrinth of the ear, and this latter is only separated from the tympanum by the thin membranes covering the fenestræ, ovalis and rotunda. The aquæductus vestibuli also connects the interior of the skull with the cavity of the labyrinth, and serves for the passage of a small vein. The mastoideo-petrosal canal leads from the mastoid cells to the interior of the skull. It serves for the passage of a vein which has been traced into the superior petrosal sinus; therefore, we have here the circulation of the tympanum in direct communication with that of the brain.

Defects of certain parts of the temporal bone from arrest of development are very common, and have a special practical significance in connection with our subject, since their existence in certain parts of the bone may favor the propagation of an inflammation of the ear to the brain. These ossification defects * are especially frequent in the tegmen tympani, but are also found in the carotid canal, in the canalis facialis, in the floor of the tympanum, in the cortical substance of the processus mastoideus, in the osseous roof of the superior semicircular canal, and in the form of a fissure of the squamous portion of the bone. In elderly persons they are also seen in the form of pits in the course of the fissura petroso-squamosa.

Hartmann (" Archiv f. Augen- und Ohrenheilk.," vii) has recently called attention to the special practical importance of the sutures which unite the squamous and the petrous portions of the temporal bone. The petro-squamous suture runs through the middle of the roof of the original antrum petrosum (the air-containing cavity into which the mastoid cells are developed later in life), and extends backward and outward to the incisura parietalis; from there it closes as the mastoideo-squamous suture upon the outer wall of the auditory meatus, and from here runs upward again to the tympanum. The mastoideo-squamous suture is found ossified at a very early period. The petro-squamous suture, on the other hand, always shows traces of its existence on the floor of the middle cranial fossa, and is even to be recognized at advanced periods of life. The inflammatory process spreads from the tympanum and from the antrum petrosum to the neighboring regions much more easily before the ossification of the petro-squamous suture than at later periods of life. There are cases in which meningeal symptoms arise in a new-born child, a few days after the appearance of an otorrhœa, and end fatally. The older the child, the less likely is the consecutive cerebral affection to occur. Toynbee rightly directs attention to the fact that, up to the second or third year of life, the cerebrum is most frequently affected, corresponding to the anatomical relations, while affections of the cerebellum and of the transverse sinus appear only at a later age. Hartmann believes that, in children, the inner portion of the mastoid cells has even a greater influence than the sutures upon the development and extension of the disease of the bones, since during the formation of the cells this part is in free communication with the tympanum proper, while in adults the cells communicate only through small openings.

The inflammation of the ear from which disease of the brain

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* Bürkner, "Archiv f. Ohrenheilk.," xiii, p. 163, and xiv, p. 136; Jänicke, "Beiträge zu den Anomalien der Schädelbasis." Inaug. Diss., Kiel, 1877. Flesch, "Archiv f. Ohrenheilk.," xiv, p. 15.

arises consists of a purulent inflammatory affection of the mucous lining of the tympanum. The mucous lining of the mastoid cells is a continuation of that of the tympanic cavity proper; as a rule, therefore, this inflammation involves the mucous membrane of the whole cavity. However, this is not necessarily the case;* and a few rare cases have been recorded in which the mastoid cells alone were involved. In extremely rare cases, acute mucous catarrh, without perforation of the drum membrane, may lead to death from meningitis.†

The course pursued by such an inflammation is as follows: The pus secreted in the tympanic cavity ruptures through the membrana tympani, and discharges into the external auditory canal; or, in some rare instances, the pus escapes into the Eustachian tube. In favorable cases, the inflammation of the mucous membrane subsides spontaneously, the secretion ceases, the membrane closes, and the parts of the tympanum are restored to a normal condition. Should this favorable result not ensue, however, then the following may take place: Retention of the pus in the tympanum or in the mastoid cells, or in both, leading to ulceration of the mucous periosteal lining of the cavity, thereby exposing the bone, which very soon becomes involved in the molecular necrosis of the tissues; decomposition of the retained pus, leading to phlebitis in any of the neighboring veins communicating with the brain; extension of the inflammation *per continuitatem* along any of the channels of communication above referred to; and, finally, the neighboring tissues may become invaded in consequence of extension of the inflammation *per contiguitatem*. Therefore, in purulent otitis, not alone the ear, but the brain also is exposed to serious risks.

The most common fatal sequelæ of inflammation of the ear are, purulent meningitis, abscess of the brain, phlebitis or thrombosis of the sinuses or of the internal jugular vein. Fatal hæmorrhage, from carious perforation of the canalis caroticus,‡ with erosion of the carotid artery, of the middle meningeal artery, of the large venous sinuses,§ or of the bulbus venæ jugularis, has been observed, but is much less common than the results first mentioned. These hæmorrhages occur only as the result of caries of the bone placed in apposition with the blood channels mentioned, and of perforation of the wall of the vessel by ulceration. The case of hæmorrhage from the lateral sinus described by Wreden occurred in the course of a purulent otitis with caries of the mastoid; there were two perforations of the sinus, through one of which the bleeding was external into the ear, the other internal into the cranial cavity. Wreden also refers to eighteen similar perforations of the sinus recorded by other authors.

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* Dr. Peabody, pathologist to the New York Hospital, has kindly favored me with the record of an autopsy conducted by himself last April, in a case in which death was caused by abscess of the brain, the result of chronic purulent otitis media, but in which "the mastoid cells presented no trace of inflammation."

† Hermann Schwartze, in Klebs's "Handb. d. path. Anat.," ii, p. 77.

‡ Toynbee, "Medico-Chir. Trans.," xliii, 1860, p. 218; see also numerous cases from various authors, referred to by Schwartze, in Klebs's "Handb. d. path. Anat.," ii, p. 12.

§ Wreden, "Monatsschrift f. Ohrenheilk.," No. 10, 1869.

Acute meningitis may result from the extension of the inflammation of the tympanum (which is always primarily a pachymeningitis) along the blood-vessels which connect the ear with the dura mater; it may be the direct result of the irritation of a caries either of the roof of the tympanum or of the inner wall of the mastoid; or, as in the case recorded by Green,* the purulent matter may penetrate into the labyrinth by ulceration or rupture of the fenestra ovalis or rotunda, and thence along the meatus auditorius internus or the aquæductus vestibuli.

The connection of the meningitis with the inflammation of the ear, although not always very prominent, can generally be traced by carefully examining the points, above referred to, at which the ear communicates with the brain. As a rule, the congestion of the meninges of the brain will be most marked over the petrous bone. After the removal of the brain, the petrous bone should be carefully examined; the dura mater will be seen intensely inflamed, and, according to the stage of the disease, thickened and abnormally adherent, or else loosened and occasionally dotted with masses of pus (Schwartze) over the diseased bone or at the point of communication with the ear; and an incision through the dura mater at this point may discover the presence of pus lying upon the subjacent bone. These changes are most likely to be found at the following points: The upper surface of the petrous bone, over the roof of the tympanum proper or that of the mastoid cells; the meatus auditorius internus; and, finally, the orifice of the aquæductus vestibuli on the posterior surface of the bone, about midway between the lateral sinus and the meatus internus.

In a few rare cases of extensive carious destruction of the petrous bone, in which death has been caused by some general disease, the dura mater over the bone has been found greatly thickened, as the result of a long-continued inflammation of the ear and petrous bone, thus affording a firm protection to the brain. This condition of the dura mater in all probability existed in a case reported by Dr. O.

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* J. Orne Green, "Trans. of the Am. Otol. Soc.," 1871, p. 55.

D. Pomeroy.* In this remarkable case there was an exfoliation of the whole of the temporal bone, except the lower part of the external auditory canal and the inner part of the petrous portion. The patient recovered, of course with loss of hearing and with facial paralysis.

As the result of inflammation of the ear, phlebitis and thrombosis may occur primarily either in the lateral sinus, in the superior petrosal sinus, in the inferior petrosal sinus, or in the jugular vein. Inflammation of the lateral sinus may result from the extension of an inflammation of the mastoid cells along the minute blood-vessels which supply the bone between the cells and the sinus; or caries of the bone on the inner wall of the mastoid cells may give rise to it; again, an inflammation of the mastoid, by causing an inflammation of the veins of the diploë, would jeopardize the lateral sinus, by the possibility of an extension of the inflammation through the principal vein of the diploë, i. e., the posterior temporal. Circumscribed inflammation or caries of the roof of the tympanum or extensive caries of the petrous bone may lead to inflammation of the superior petrosal sinus. Inflammation of the mastoid cells may extend along the mastoideo-petrosal canal, which, as we have seen, conveys a vein to the petrosal sinus; and, finally, inflammation of this sinus may, as we shall learn later, result secondarily from the extension of a thrombus or phlebitis of the lateral sinus. The internal jugular vein is liable to inflammation from the same causes as those which give rise to inflammation of the lateral sinus. An inflammation of the tympanum proper may extend through the minute foramina in the floor of this cavity, and thus cause a phlebitis of the internal jugular vein; again, the floor of the tympanum may become the seat of caries, or there may be a defect at this point, in which case the inflamed mucous lining of the tympanum would lie in apposition with the coverings of the jugular vein; finally, the jugular vein, like the sinuses, may be affected secondarily from an extension downward of an inflammation in the lateral sinus.

In its most advanced stage, encephalitis, from disease of the ear, is always found as abscess of the substance of the brain. According to Gintrac,† the principal seat of abscess is in the medullary substance, seldom in the cortex. The position of the abscess, as a general thing, depends upon the cause. The middle portion of the hemispheres is more frequently the seat of abscess than the anterior or posterior portions; this is especially the case when the disease is caused by caries of the petrous bone, which sometimes occasions abscess of the cerebellum.* The abscess most frequently occurs in the cerebral hemisphere next to the diseased ear; it may be on the lower surface of the hemisphere, directly over and in communication with the diseased bone; or it may be in the substance of the hemisphere, with a portion of healthy brain tissue between it and the diseased bone; in some very rare cases, it may be in the substance of the cerebral hemisphere on the opposite side from the diseased ear. The abscesses may be either single or multiple, and in the latter case they may be in different parts of the brain.

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* "Trans. of the Am. Otol. Soc.," 1872.

† "Journal de Bordeaux," 3^me^ série, iii, p. 8.; abstracted in "Schmidt's Jahrbücher," cxxx, p. 21.

In regard to the etiology of abscess of the brain, Meyer, † in his highly valuable and exhaustive monograph on the pathology of this disease, observes that "almost more interesting than the effect of traumatism upon the brain is the influence of otorrhœa with caries of the temporal bone." Of eighty cases of cerebral abscess recorded by Lebert, twenty were due to otorrhœa; in Schott's forty cases, otorrhœa occurred thirteen times; of Meyer's eighty-six cases, twenty were caused by otorrhœa (*l. c.*, p. 25). The frequency of abscess of the brain after otorrhœa is therefore about the same as that of traumatic purulent encephalitis.

In Meyer's collected cases, suppuration of the cerebrum occurred very frequently (ten times in nineteen cases), and the right hemisphere was its most frequent seat (nine times in ten cases), as would be expected from the fact that the right petrous bone was more frequently found diseased than the left one (fourteen cases right; four cases left). We do not know whether otorrhœa is more frequent on the right side than on the left. In only two cases did multiple abscess occur as the result of caries of the right petrous bone. In the first of these cases, there was one abscess in the cerebrum, and another in the cerebellum; in the second case, there were three abscesses in the cerebellum. Generally it is chronic otorrhœa which leads to abscess of the brain. Of nineteen cases, there was only one which resulted from acute otitis. "Not infrequently," says Meyer, "a chronic catarrh of the mucous membrane of the external auditory canal or the tympanic cavity causes a polypoid hypertrophy of the mucosa on the one side, and a chronic inflammation of the neighboring bone on the other side. The caries of the petrous bone thus produced causes an inflammation and close adhesion of the dura mater, and from here the inflammation passes into the depth of the parenchyma of the brain, sometimes in such a manner that the dura mater forms the anterior covering of the abscess, at other times, however, so that the abscess remains concealed deep in the parenchyma. Frequently fistulæ exist between the abscess in the brain and the suppurating bone; but this is not always the case; the dura mater and the bone need not necessarily be in any way defective." Gull * observes that perfectly healthy brain tissue may lie between the abscess in the brain and the diseased bone, and that there we must suppose that the abscess of the brain occurs in the same way that it does, not infrequently, from inflammation of still more remote parts. This origin of the abscess by metastasis from an otorrhœa is not impossible, yet it is certainly exceptional; at least, in Meyer's cases there are no examples in which the abscess occurred on the side opposite to the diseased ear.

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* Lebert, "Ueber Gehirnabscesse," Virchow's "Archiv," x, p. 95.

† "Zur Pathologie des Hirnabscesses," Inaug. Diss. von Dr. Rudolph Meyer. Zürich 1867.

In caries of the petrous bone, it is not always possible to distinguish between thrombosis of the lateral sinus and abscess of the brain. Meyer found the two conditions combined in one of the cases collected by himself, where the petrous bone was diseased on its posterior surface, giving rise to polypoid excrescences on the anterior wall of the sinus. The seat of the abscess in the brain depends very much upon the position of the bone affection; and, as Toynbee first pointed out, pretty regular laws can be established in this respect. According to Toynbee, the retention of the otorrhœal products is the chief cause of the progress of the disease inward.

Toynbee † endeavored to show that each of the cavities of the ear had its particular division of the encephalon to which it communicated disease. Thus, inflammation of the meatus auditorius externus will, with some special exceptions, extend to the lateral sinus and the cerebellum; inflammation of the tympanum, to the cerebrum; and of the labyrinth, to the medulla oblongata. Lebert concedes the highest consideration to this observation, yet he believes more clinical proof necessary, and Gull ‡ adduces a case from his own experience, where the inflammation originated in the tympanum, but was followed by abscess of the cerebellum by extension of the inflammation through the vein of the aquæductus vestibuli.

A further exception to Toynbee's law is furnished by another case cited by Gull, where, after caries of the roof of the tympanum and mastoid cells, acute inflammation of the lateral sinus occurred. Gull has therefore modified Toynbee's law, and observes that the cerebellum and lateral sinus may suffer from disease of the mastoid, while the cerebrum is endangered by caries of the roof of the tym-

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* "Guy's Hospital Reports," 3d series, iii.

† Lectures, "Med. Times and Gaz.," 1855, p. 1.

‡ "Guy's Hospital Reports," 3d series, vol. iii, 1857, case iii, p. 280.

panum. However, although the anatomical relations aid us in anticipating what part of the encephalon may suffer, yet they do not enable us to prognosticate from the beginning of a case what the course will be, whether exclusively in one direction or another.

Other observations show that Gull's modification of Toynbee's law is a justifiable one. In one case of otorrhœa which occurred in the course of measles, and existed for forty-three years, a polypoid growth of the labyrinthine wall of the tympanum followed a purulent inflammation in the latter; this led to a thickening of the osseous roof of the tympanum, and not to a disease of the cerebrum, as Toynbee would have expected; but the pus was forced through the fenestra ovalis into the labyrinth, and from here it followed the auditory nerve through the internal meatus to the cerebellum. The acoustic and facial nerves were disorganized by purulent inflammation, and an abscess was formed in the left lobe of the cerebellum, of the size of a walnut, which was separated from the meninges by a thin layer of brain substance. Abscess of the cerebellum may result from otorrhœa without a perforating caries of the bone, by extension from the labyrinth following the vena aquæductûs vestibuli, also the aquæductus cochleæ, the auditory or the facial nerve, as well as from the mastoid cells. A third possible origin is from the posterior wall of the external auditory canal; this occurred in a case reported by Hughlings Jackson and Jonathan Hutchinson;* a fistula was found in the carious petrous bone, between the external auditory canal and a large encysted abscess in the anterior part of the right hemisphere of the cerebellum, the anterior wall of the abscess being formed of dura mater, which was perforated by a small opening that led to a canal in the temporal bone (around which the bone was carious), which communicated with the meatus auditorius externus; the posterior part of the wall was formed of a thick, firm membrane. An interesting feature in this case was the existence of a smaller encysted abscess immediately behind the one just mentioned, and of a third, larger, non-encysted collection of disintegrated brain tissue, pus, etc., on the inner side of and parallel to the two others. Abscess of the cerebrum, resulting from otorrhœa, is always caused by caries of the tympanic roof; often this lamella of bone is destroyed by suppuration; in one case the purulent collection was between the tentorium and the right posterior lobe: generally, however, it lies deeper in the cerebrum, and is separated from the carious bone by a layer of brain substance.

We have seen that, next to traumatism, otorrhœa is the most frequent cause of abscess of the brain. The preponderance of abscess in the male (according to Lebert, $\frac{53}{80}$; Schott, $\frac{31}{40}$; Meyer, $\frac{57}{78}$) depends principally upon the frequency of traumatic brain abscess in men (of twenty cases of this kind, eighteen occurred in men). The frequency of abscess of the brain from the tenth to the fiftieth year of age finds an explanation in the fact that otorrhœa and traumatism are especially common during this period.

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* "Med. Times and Gaz.," 1861, vol. i, p. 198 (case under Dr. Davies's care).

The following table from Meyer shows the number of cases of cerebral abscesses at different periods of life:

3	between the	1st and 10th	years of age	(1	traumatic;	1	otorrhœal).
12	“	10th and 20th	“ “	4	“	2	“
18	“	20th and 30th	“ “	2	“	6	“
11	“	30th and 40th	“ “	8	“	3	“
15	“	40th and 50th	“ “	2	“	1	“
7	“	50th and 60th	“ “	0	“	1	“
5	“	60th and 70th	“ “	0	“	0	“
71				17	“	14	“

The next table shows the causes of the abscesses:

Typhus	1
Intra-cranial tumor	2
Acute pyæmia	2
Disease of the nasal mucous membrane	3
Disease of the blood-vessels	5
Inflammation of neighboring part of the brain	5
Unknown causes	11
Suppuration of distant organs, especially the lungs	19
Caries of the petrous bone	20
Injuries	21
Total	89

It is very doubtful if, except in cerebro-spinal meningitis, the inflammation of the brain is ever the primary disease, and the inflammation of the ear secondary. Moos * has described a case of purulent otitis which was secondary to cerebro-spinal meningitis. The metastasis was along the auditory nerve in the meatus internus. However, Berndgen † records a case in which he claims that the inflammatory process passed from the brain.

(*To be concluded.*)

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* “Arch. of Ophthal. and Otol.,” iii, 2, p. 177, case 3.

† “Monatsschr. f. Ohrenheilk.,” 1877, No. 3.

ON THE GROWTH OF CHILDREN DURING THE FIRST YEAR, AND ON THE NUTRITIVE CONDITIONS OF EARLY CHILDHOOD.

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While engaged in studying the influence of electricity on general nutrition, I undertook a series of experiments on children, at the New York Infant Asylum, expecting that the improvement of nutrition caused by the application of electricity would lead to increased energy of growth. To avoid any unwarranted conclusion, and for the purpose of appreciating the results of the experiments, I felt the need of a correct standard of growth during early childhood. In the literature of the subject I found only general statements, of no practical value whatever, and the correctness of which appeared to me to be very doubtful. The only attempt to give a numerical estimate of the growth of children during the first year was by Bouchut,* whose table is an approximate one, as it is based upon a limited number of occasional observations. But in the later works † I find it quoted as if representing actual observations, thus conveying an erroneous and misleading idea. It seems very strange, considering the amount of labor bestowed upon various topics in medicine, that this one has been left almost entirely untouched; and yet, as will be seen presently, it deserves serious attention.

The modern clinicist prides himself, and not without reason, on the present mechanical diagnostic appliances, but it is a mistake to think that we have reached the desideratum or that we derive from them all possible good. They are not of equal importance in different domains of medicine. Thus, the thermometer is comparatively of a lesser value in the case of children than of adults, while the scales, so seldom used when we deal with the latter, should occupy a prominent position in the hands of the physician when called to take charge of a child. We must bear in mind that there exists an essential difference between the constitution of an adult and that of a child. The system of the former is well balanced and is endowed with greater inertia; it may be compared to a pyramid standing upon its base, thus presenting the greatest stability; while that of the child may be likened to the pyramid resting upon its apex, its equilibrium liable to be destroyed by the slightest deviation. This is determined by the peculiar conditions of the child's nutrition, of which we will speak later on. Suffice it to say here that a child's nervous system suffers from the functional activity to a greater extent than is the case with a grown person. Consequently it depends more upon rest and nourishment as the conditions of a healthy action. If they are not properly attended to, the results are self-evident—the function of the nervous system becomes defective, abnormal innervation of the organs leads to their unnatural action and state, and the whole nutritive processes pursue a pathological course. On the other hand, the child's life involves a greater consumption of nutriment supply, whether in the form of food or of tissues, and consequently the process of assimilation occupies a far more important position in a child's economy than in that of an adult.

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* "Gaz. des Hôp.," 1874, No. 78, p. 619.

† Gerhardt, "Handbuch d. Kinderkrankheiten," Bd. i, Tübingen, 1877, p. 63. Wagner, "Manual of General Pathology," New York, 1876, p. 47. Gerhardt, "Lehrbuch d. Kinderkrankheiten," Russian transl., p. 2.

The process of assimilation depends to the greatest extent upon the vigorous action of all the organs, and of the nervous system in particular. It is easily understood, then, why children are so apt to suffer from purely nutritive diseases, why the various diseases prove fatal mainly from the inability of the child to resist them, and why we can always trace the occurrence of a disease to a previous general nutritive disorder. This difference in the constitutions of the adult and the child manifests itself in the peculiar behavior of their weights. The weight of a grown person shows an indisposition to active fluctuations, which, as a rule, do not exceed a comparatively small percentage of the entire mass; but it is not uncommon to see a child gain or lose from ten to fifteen per cent. of its weight in a single week, something absolutely impossible in the case of a grown person. An adult is brought to the physician by his self-consciousness of ill-being, which is the earliest manifestation of a morbid process. He is able, besides, to give a proper account of himself. But the baby is entirely at the mercy of his parents' intelligence and keenness of observation. Under these circumstances, not only would a regularly conducted record of his growth be of invaluable service as a means of judging of the severity of the disease, but, what is more important, we should find in it sufficient indications of an approaching disease, which, if proper measures were taken in time, might be prevented, aborted, or made more manageable. But, to be able to use it intelligently and to the best advantage, we must know more than we do at present of the laws governing the growth of the child and of the conditions which modify them.

The object of this paper is to bring this subject to the notice of the profession, and to give the main outlines. The paper is based upon observations conducted by Dr. Anna Angell, at the New York Infant Asylum, while Resident Physician of that institution. Unfortunately, as her work was somewhat advanced, the Asylum was reorganized on new bases, and for the lack of further material it was stopped before it had covered its intended scope. Still, something was learned about these laws and conditions, and those that have facilities to continue the work may fill the blanks in the present attempt.

Table I.—*The Number of Children weighed, their Total and Average Gains or Losses each Week, and Weekly Averages for Every Month.*

No. of the Week.	No. of Children.	Total Gain or Loss weekly.	Average Weekly Gain or Loss.	No. of the Month.	Average Weekly Gain for the Month.	No. of the Week.	No. of Children.	Total Gain or Loss weekly.	Average Weekly Gain or Loss.	No. of the Month.	Average Weekly Gain for the Month.
		Oz.	Oz.		Oz.			Oz.	Oz.		Oz.
1st	76	−82	−1·08	1st	2·56	27th	16	57	3·56	7th	1·91
2d	71	201	2·83			28th	16	20	1·25		
3d	65	263	4·05			29th	14	25	1·78		
4th	56	258	4·43			30th	14	15	1·07		
5th	50	259	5·18	2d	5·79	31st	14	42	3·00	8th	3·46
6th	47	277	5·89			32d	15	46	3·06		
7th	45	295	6·55			33d	15	77	5·13		
8th	45	250	5·55			34th	14	37	2·64		
9th	42	179	4·26	3d	5·12	35th	13	51	3·92	9th	1·70
10th	39	182	4·66			36th	12	40	3·33		
11th	34	169	4·97			37th	12	53	4·41		
12th	29	177	6·10			38th	11	−5	−4·54		
13th	27	151	5·59			39th	10	14	1·40.		
14th	25	105	4·20	4th	4·69	40th	10	9	0·90	10th	1·69
15th	26	125	4·59			41st	10	14	1·40		
16th	26	144	5·54			42d	9	33	3·66		
17th	24	107	4·45			43d	7	6	0·85		
18th	23	136	5·91	5th	4·26	44th	5	18	3·60	11th	2·63
19th	23	85	3·69			45th	5	24	4·80		
20th	17	70	4·12			46th	5	11	2·20		
21st	19	63	3·31			47th	5	−4	−0·80		
22d	20	78	3·90	6th	3·39	48th	3	4	1·33	12th	3·04
23d	19	55	2·89			49th	7	21	3·00		
24th	19	48	2·52			50th	8	29	3·62		
25th	19	98	5·16			51st	7	19	2·71		
26th	16	40	2·50			52d	6	28	4·66		

I have the record of the weight at birth of 102 children. The average weight of a new-born child was 7·176 pounds, or 3,251 grammes, showing that the children under observation belonged, to use the classification of Ritter,* to the class of moderately well-nourished children. He divides the new-born into four groups: 1, very weak children, weighing on the average 2,300 grammes; 2, weak children, 2,960 grammes; 3, normal children, 3,390 grammes; and 4, strong children, 4,070 grammes. Our average approaches nearest to that of Hecker—3,275 grammes. Quetelet estimates the

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* Gerhardt, "Handbuch d. Kinderkrankheiten," Bd. i, p. 64.

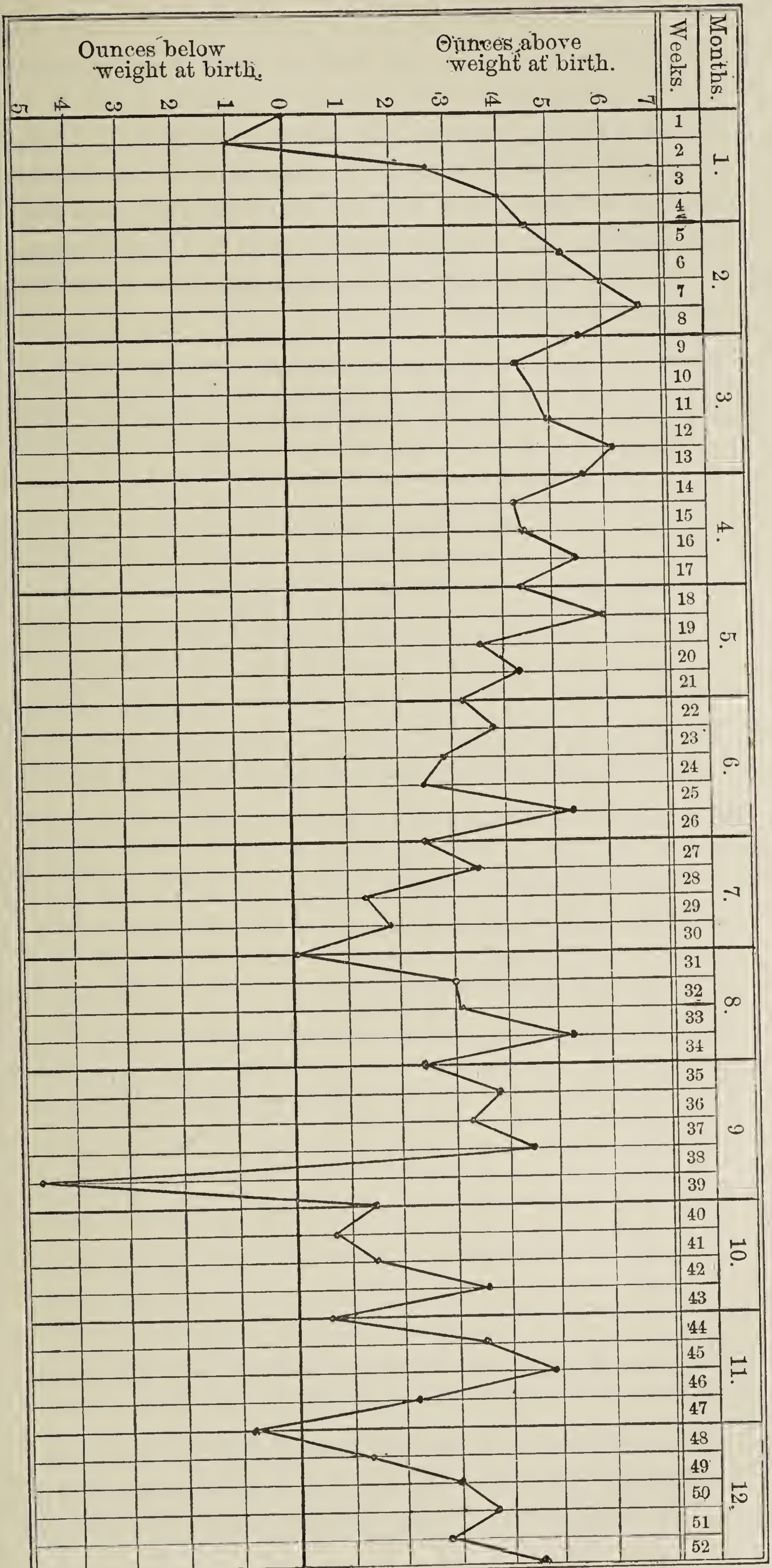

Chart I.—Graphic Representation of the Weekly Growth during the First Year.

weight of a new-born boy as 3,200 grammes. Siebold found the weight of girls to be 3,251, and that of boys 3,500 grammes; Ingerslev, 3,280 (girls), and 3,381 (boys); Scanzoni, 3,437.* Of these 102 children, 57 were boys, of an average weight of 7·28 pounds (3,301 grammes); and 45 girls, 7·05 pounds (3,197 grammes).

According to Quetelet, a child gains 6,000 grammes during the first year, making an average weekly gain of 115·4 grammes, or 4 ounces. The average weekly gain of the children at the New York Infant Asylum was 3·31 ounces.

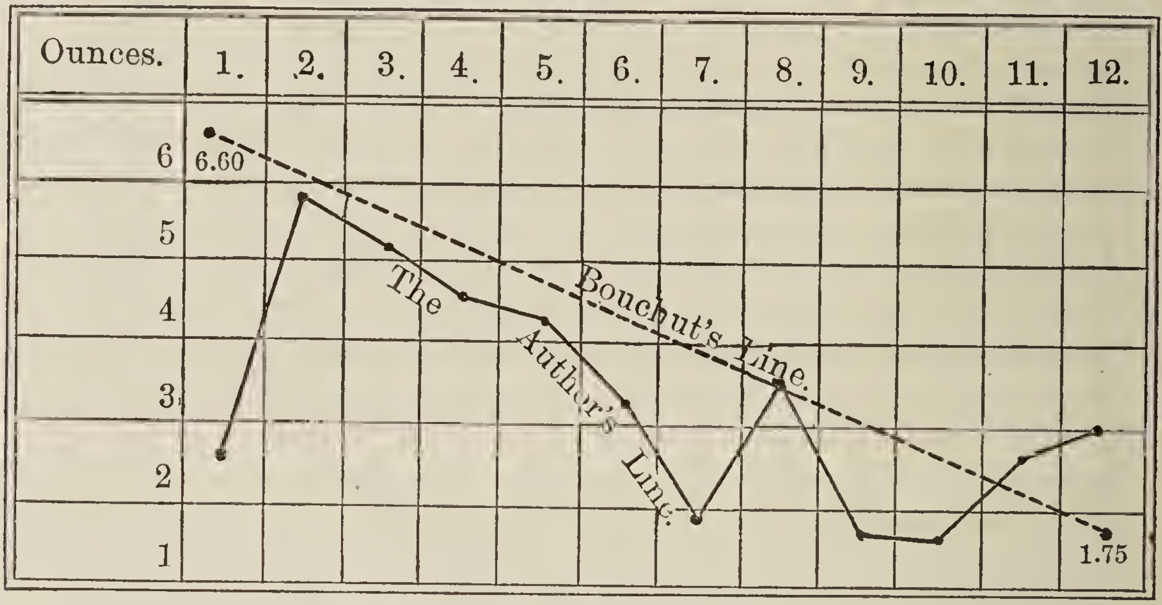

Chart II.—The Average Weekly Growth for Each Month, and the Same according to Bouchut.

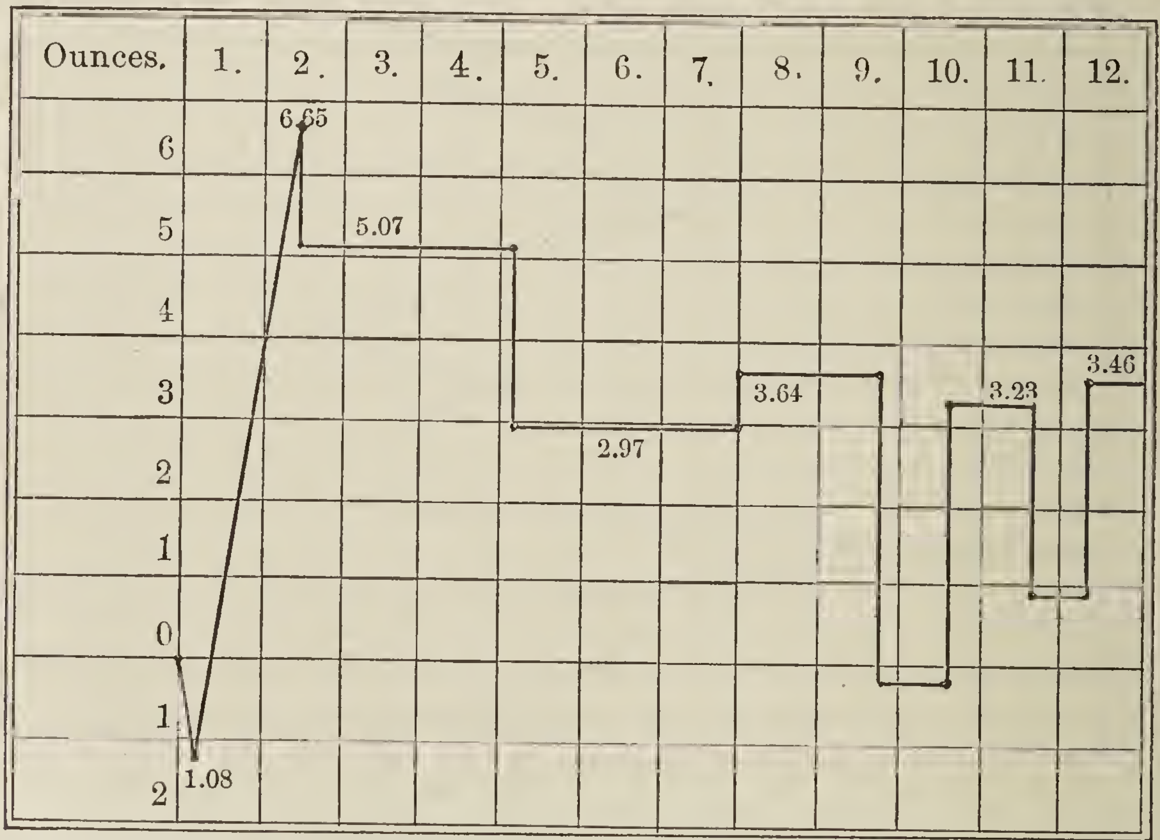

Chart III.—Average Weekly Growth during the Periods into which the First Year is divided.

In Table I will be found the number of children weighed weekly during the entire year, also the total and average weekly gains or losses, and the average weekly gains during each consecutive month.

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* *Ibid.*

To facilitate their examination, I have represented them graphically. Chart I gives the weekly line. Chart II gives the weekly line for each month, and also the same according to Bouchut. Chart III represents the weekly lines for the periods into which I divide the first year.

It will be seen that the child loses during the first week; then the growth rapidly increases, reaching its maximum during the seventh week. During the third, fourth, fifth, sixth, and seventh months its energy declines, gradually at first, and more rapidly during the last two months, with the exception of the twenty-fifth and twenty-seventh weeks, when the growth is more active, reaching the lowest point during the twenty-eighth, twenty-ninth, and thirtieth weeks. In the course of the following seven weeks (the eighth and ninth months), the growth is again more active, but it declines from the thirty-eighth to the forty-first week. From the forty-second week to the forty-fifth, the child grows again with more vigor, which remains almost the same up to the end of the year, with the exception of the forty-sixth, forty-seventh, and forty-eighth weeks, when it is somewhat depressed.

This general description of the growth of the child during the first year differs essentially from the usual statements found in the text-books on diseases of children, which are well represented by the Bouchut line. According to him, the child gains during the first month 750 grammes (6·63 ounces weekly); and during each consecutive month the energy of the growth declines by 50 grammes (0·44 ounce weekly), so that during the last month the child gains only 200 grammes (1·76 ounce weekly). But the actual observations do not confirm the existence of such a bee-line, which is seldom met with in nature. I will call the attention of the reader to Chart III, which represents the child's growth as being composed of distinct stages. Let us examine them separately, and try to find their meaning.

The First Period.—It is composed of the first six weeks. After nine months of intra-uterine life, the child is suddenly transferred to entirely new and different conditions of existence. We should naturally expect a temporary disturbance in its general economy while it was becoming acclimatized, so to speak, to its new surroundings. This period is, then, an intermediate one between the normal intra- and normal extra-uterine nutritions, the latter being the second period. A pretty accurate idea of the state of the child's system may be formed from Tables II and III, which show the weight of all the children during each of seven weeks, and at the end of each week, as compared with their original weight at birth.

TABLE II.—*Percentages of Children who gained or lost Weight, or whose Weight remained unchanged, during Each Week, from the First to the Seventh.*

WEEKS.	1st.	2d.	3d.	4th.	5th.	6th.	7th.
Weight increased	45	68	83	86	96	91	96
" diminished	50	21	11	7	2	6	2
" remained unchanged	5	11	6	7	2	2	2
Number of children under observation	76	71	65	56	50	47	45

TABLE III.—*Percentages of Children whose Weight was Greater, Smaller, or the Same, as compared with that at Birth, at the end of Each Week, from the First to the Seventh.*

WEEKS.	1st.	2d.	3d.	4th.	5th.	6th.	7th.
Weight greater	45	58	69	80	88	96	98
" smaller	50	37	28	20	12	4	2
" the same	5	5	1	..	..	..	..
Number of children under observation	76	71	65	56	50	47	45

From the first column of both tables we learn that less than half of all the children had gained at the end of the first week. In a small number the weight remained unchanged, and in exactly one half there was a loss during the first week. If we compare the respective columns of both tables, we see that, although the number of children that are still rapidly losing diminishes, yet the number of those whose weight is becoming greater than at birth does not keep pace with the first; showing that the losses during the first week were too great, and the subsequent gains too small. But we may say that all children have entirely recovered by the end of the sixth week, and from that time on will steadily gain.

TABLE IV.

Day.	Hours.	GREGORY.						KÉZMARSZKY.							ACCORDING TO BOTH OBSERVERS.	
		No. of Children who lost.	How much on an Average, grammes.	No. of Children who gained.	How much on an Average, grammes.	General Average per Half Day.	General Average per Day.	No. of Children who lost.	No. of Children, Weight unchang'd.	No. of Children who gained.	Total Average per Half Day, grammes.	Total Average per Day, grammes.	Average Daily Gains and Losses, Forty-one Children.	Average Daily Losses and Gains, both Groups.	Total No. of Children.	Average Daily Loss or Gain.
1	0–12 12–24	33 33	−81 −58	.. ..	....	−81 −58	−139	20 19	1 2	0 0	−62·5 −68·3	−130·8	−125·5	−127	95	−131
2	24–36 36–48	31 21	−57·6 −32·7	2 12	32·5 24·5	−52 −12	−64	25 25	5 5	2 2	−41·5 −43·4	− 84·9	−102·4	− 95	106	− 85
3	48–60 60–72	12 7	−32·1 −28·0	21 26	31·0 39·5	8 25	+33	12 11	4 7	16 14	− 1·6 − 6·0	− 7·6	− 13·2	− 11	106	+ 3
4	72–84 84–96	10 4	−21·6 −11·5	23 29	37·7 35·2	20 30	+50	5 8	10 5	17 19	+14·8 +15·8	+ 30·6	+ 6·8	+ 17	106	+ 27
5	96–108 108–120	5 7	−20·2 −13·2	28 26	33·3 32·4	25 25	+50	7 8	5 9	20 15	+15·4 +13·1	+ 28·5	+ 23·9	+ 26	106	+ 33
6	120–132 132–144	.. ..	....	.. ..	....	.. ..	....	4 13	4 8	24 11	+19·6 +17·5	+ 37·1	+ 20·9	+ 28	...	.....
7	144–156 156–168	.. ..	....	.. ..	....	.. ..	... .	4 1	6 8	10 11	+ 8·7 +17·5	+ 26·2	+ 34·4	+ 32	...	.....

Table II indicates also that the first week of the child's life presents the features of this period most distinctly, as during this time the child's condition is most precarious. But I have no data of my own relating to it, and I will use the observations of Gregory * and Kézmarszky,† who weighed children every twelve hours during the first week. They are condensed in Table IV. We learn from it that during the first day not a single child, out of ninety-five, gained, and that all but three lost; the total average loss was 131 grammes, or nearly 5 ounces. During the second day, eighteen out of one hundred and six gained some; seventy-eight lost again, but less in comparison with the previous day; so that their total average loss for the day was 85 grammes. The loss in weight during the first two days is 216 grammes, or nearly 8 ounces, or six per cent. of the weight at birth. From this time on, the number of children who lose in weight steadily diminishes, and the losses are smaller, while the number of children that gain increases, and the gains are greater. As the result, we have the average gain on the third day 3 grammes, on the fourth day 27 grammes, on the fifth day 33 grammes, etc. But they are not sufficiently large to cover the losses of the first two days, and at the end of the first week there is still a deficiency (according to Table I, 1·08 ounce). The child regains its weight at birth some time in the course of the second week—according to Bouchaud, between the fourth and seventh days; according to Hoffman, on the fifth or sixth; according to Bouchut, on the seventh; and according to Haake and Gregory, on the ninth.‡ This great variety of dates is due to the fact that the observations were not conducted on children situated under like conditions. The ninth day appears to me to answer the nearest in an average child. After the equilibrium becomes reëstablished, the child's weight gradually increases until the seventh week, when the intensity of its growth reaches the maximum.

There are but a few words to be said about the growth of children in height. Litarzik § gives the following data representing the rapidity of the growth of children: The new-born child is 50 centimetres long. During the first month it gains $6\frac{10}{12}$ cm., or 0·228 cm. daily; during the second and third months the daily gain is 0·114 cm.; for the following three months, 0·076 cm.; for the next four months, 0·057 cm.; and during the remaining part of the year, 0·046 cm. These figures are of no practical value, but they would

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* Gerhardt, "Handbuch d. Kinderkrankheiten," Bd. i, p. 65.

† "Arch. f. Gynäk.," v, p. 547.

‡ Gerhardt, *op. cit.*, p. 64.

§ Canstatt's "Jahresbericht," 1862, i, p. 194.

be if they were less general. I have found one detailed account of the growth in length, the measurements having been made by Dr. Haehner on his own child: *

	Cm.
Height at birth	50
Average daily gain during the first sixteen days	0·125
“ “ “ following nine days	0·111
“ “ “ *first month*	0·12
“ “ from the twenty-fifth day to the sixth week	0·06
“ “ “ sixth week to the eighth week	0·035
“ “ during *second month*	0·05
“ “ from the eighth week to the eleventh week	0·119
“ “ “ eleventh week to the thirteenth week	0·214
“ “ during *third month*	0·157
“ “ from the thirteenth week to the fifteenth week	0·140
“ “ “ fifteenth week to the eighteenth week	0·050
“ “ during *fourth month*	0·086
“ “ from the fifth to the tenth month	0·043
“ “ during the *eleventh* and *twelfth months*	0·071

It would not be safe to draw any general conclusions on the ground of a single case; still, as the child was a perfectly healthy one, we may venture to point to a certain resemblance between the gains in height and those in weight: namely, the gains are the greatest some time after birth; the least during the middle of the year; and toward the end of the year there is a renewal of the energy in both directions.

It remains to say a few words about the mortality of children in the course of the first year. The greatest death rate is immediately after birth. According to Marc d'Espine,† in the Geneva Canton, 141 children died during the first day; 320 during the first week; 121 during the second week; 85 during the third week; 49 during the fourth week; 956 during the first six months; 300 during the second six months.

In other words, the mortality of the first day formed eleven per cent. of the entire number of deaths during the whole year, forty-seven per cent. of those in the second half of the year, fifteen per cent. of those in the first half, twenty-five per cent. of those in the first month, and almost one half of those in the first week. While the number of deaths during the first month formed about one half of that during the whole year, it was almost double that for the second half of the year, and about two thirds of that for the first six months. The proportion of deaths during the first and the second halves of the year is as three to one, and the mortality of the first month is twice as large as that of the second.

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* "Am. Jour. of Obstet.," Oct., 1880, p. 982.

† Gerhardt, "Handbuch," etc., Bd. i, p. 554.

The weekly statements of the Board of Health of St. Petersburg* give the following information concerning the mortality from different diseases during both halves of the year:

	Children from One to Five Months Old.	Children from Six to Eleven Months Old.
	Per Cent.	Per Cent.
Death rate from asthenia	24·6	1·5
" " diseases of the digestive organs	35·4	34·1
" " " " respiratory organs	14·4	29·1
" " infectious diseases	2·1	9·6
" " all other causes	23·3	25·4

From the report of thirty-six Thuringian physicians,† the mortality from different diseases may be estimated as follows: The danger to life in diseases of the digestive and respiratory organs is about the same—eight per cent., or one death represents twelve cases of illness sufficiently severe to call for a physician; the mortality of diseases of the nervous system is about thirty-six per cent., or one death corresponds to 2·7 cases; the mortality of the remaining diseases is twelve per cent., or one to eight.

With all these facts relating to this transient period in one way or another, we are now prepared to inquire into the peculiarities of the nutritive processes of the early part of extra-uterine life. It is evident that the forces operating so injuriously upon the child's economy are most potent immediately after birth. What is their nature? The initial loss in weight, which is one of the most striking features of this period, is accounted for by numerous factors: by new and unfavorable conditions of nourishment, evacuation of meconium and urine, drying of the skin macerated in the liquor amnii, etc.; even the separation of the umbilical cord is taken into consideration. But, as Ingerslev ‡ remarked long ago, they give us only a partial explanation.

Let us examine these influences in detail. The helplessness of the new-born child has repeatedly been pointed out. In fact, the child at birth is still in the embryonal stage of development with regard to many organs, and the nervous system in particular. I will refer the reader to the anatomical researches of Parrot § concerning the development of the brain, and to the investigations of

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* As reported in "Vratcheb. Vedomosti."

† Gerhardt, *op. cit.*, p. 584.

‡ Parrot, "Clinique des Nouveaux-nés," 1877, p. 45.

§ "Arch. de Physiol. Norm. et Pathol.," 1879, p. 505.

Soltmann * relating to the physiological properties of the nervous tissue. While a pup as soon as born creeps immediately to the breast, the baby gains the control over his muscular system slowly and by degrees. The muscles involved in the act of sucking are second in order in being the subject of volition, and their first efforts are very imperfect at that. The new-born child takes, on the average, during the first day, about 25 grammes of milk (Krüger says 12 to 15 grammes; Bouchut, 30; Bartsch, 20; Bouchaud, 28); during the second, about 150; during the third, about 375; during the fourth, 400; at the end of the first month, over 600 daily; and then the daily consumption gradually increases. It is evident that the child's nourishment is deficient during the first few days. What is more, the milk acts as a laxative; it is not properly digested, and, if we consider that the mother's health is impaired by the process of labor and the phenomena preceding it, the milk itself can not be regarded as perfectly normal. The fæcal evacuations of a young child do not exceed 50 grammes daily, and during the first two days, according to Bouchaud, they are about 45 grammes. The kidneys are inactive at first, and in some cases urine is not passed during the first day or two. According to Martin and Ruge,† who made their observations on seventeen healthy boys, the average daily amount of urine from the first to the tenth day is as follows: 12, 12, 23, 39, 35, 55, 51, 55, 31, and 61 grammes. The urine is of a higher specific gravity at first (1·010), but after three days it falls to 1·003 or 1·002. The skin of a young child is not active at first. Bouchaud estimated the amount of water lost by it at 55 to 60 grammes daily. He found also that the excess of matter given off over that taken in was 2 grammes in an hour, and, according to Bartsch, it is from 3·6 to 4·6 grammes. If we now designate the loss in weight, the amount of milk taken daily, and the daily elimination by the kidneys, skin, intestines, and lungs by L, m, k, s, i, and p, respectively, we may make the following equation, $L + m = k + s + i + p$, and, substituting their approximate numerical values, we have $131 + 25 = 12 + 57 + 45 + 48$, or $156 = 162$. This shows that the estimates given above were pretty accurate. It is evident that if the value of m had been greater, L would have been smaller, or even plus instead of minus. Insufficient nourishment, therefore, is one of the causes of loss in weight. According to Kehrer,‡ the lower animals gain from the first, but they take a large amount of milk.

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* "Rev. des Sci. Méd.," xii, 1878, p. 54.

† "Centralbl. f. d. med. Wissensch.," 1875, p. 387.

‡ "Arch. f. Gynäk.," i, p. 124.

On the other hand, if the values of the second part of our equation were smaller, L would behave in a similar manner as in the case of larger nutriment. This implies less active nutrition. The cutaneous and intestinal excretions, for evident reasons, may be left out of consideration. A child loses by the lungs, according to Bouchaud, 48 grammes daily, and, according to Bartsch, 86 to 108 grammes. As we have no information concerning the respiratory chemistry in the new-born, we have to use the following calculation to determine the energy of the carbon-oxygen exchange. The ratio of the exhaled carbonic acid to the inhaled oxygen is as 1 to 0·83, and the ratio of the carbonic acid to the water we eliminate by the lungs is as 1 to 0·36.* The amount of moisture in the air we breathe is very small, and may be omitted. The quantity of carbonic acid exhaled by the new-born in a day will be found from the following equation: $x + 0{\cdot}36x - 0{\cdot}83x = 48$. That is to say, $x = 90$, which would have been twice as large if we had used Bartsch's figures. Consequently the new-born eliminates in the course of a day from 30 to 60 grammes of carbonic acid to the kilogramme, which is from two to four times as great as in the adult (14·3 grammes), and also exceeds that of the intermediate periods. This shows that the carbon-oxygen exchange in the new-born is of unusual activity. There is no doubt that its blood is overcharged with carbonic acid, and the cyanotic color of its skin (noticeable during the first ten days after birth) and the great frequency of the respiration and pulse are the natural results of this.

The quantitative importance of nitrogen exchange is very slight, being from one to three per cent. of the whole, of which five sixths are eliminated by the kidneys and one sixth by the intestines.† The new-born child receiving a very insufficient amount of food, the inactive state of the muscular system and the liver presents even still less favorable conditions for it, and consequently the elimination of urea is below that of an adult. But, according to Parrot,‡ the child's urine contains the greatest amount of urea during the first days after birth. During the first day there are 7·05 grammes of urea to the litre of urine; the percentage diminishes, and is the smallest between the fifth and ninth days (1·7 gramme to the litre); it increases then, and the average for the rest of the first month is 2·73 grammes to the litre.

This teaches us that in the system of the new-born child an unusually active disintegration of tissues is going on, because the insufficient food supply is below the demands of the nutritive processes. In other words, the child is in a state of starvation. On a previous occasion * I have endeavored to show that the starvation proves fatal primarily not from the deficiency in the materials to meet the demands of the processes of disintegration, but as an immediate result of the exhaustion of the nervous system, because the substances on which it depends for nutrition are to be found in the normal food and, to a much lesser degree, within the system itself. I stated that the endurance of the starvation would be in proportion to the resistance of the nervous tissue to suffering from the peculiar results of its functional activity, which are relieved by proper food supply and rest. In this the nervous tissue of different individuals presents very wide variations. These statements are applicable to the condition of the new-born child. From the facts, that the child sleeps almost all the time, when not nursing; that all neurotics produce dangerous results, even in very small doses; that the nervous system is in a state of great activity, even when the child is asleep, we may conclude that its nervous tissue is readily perishable, and consequently that a child will resist the lack of food in a lesser degree than an adult. Experiments prove this. Magendie states that a pup four days old died from starvation on the third day, while an animal six years old died at the end of a month. Falck's three pups, eighteen hours old, died also on the third day, and an old dog on the sixty-first day. Chossat's young pigeons died after three days of starvation, middle-sized pigeons on the sixth day, and full-grown birds on the thirteenth day. † In the Munich Maternity, of the entire number of children that died from asthenia [*Lebensschwäche*], one half died during the first twenty-four hours, one quarter more during the second day, and the remaining quarter by the tenth day.‡

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* Landois, "Lehrbuch d. Physiologie," 1879, p. 242.

† *Ibid.*, p. 438.

‡ *Op. cit.*

We have no actual facts concerning the energy of fœtal nutrition, but we have reason to think it is less active than after birth, and that this excitement of the nutritive processes is intimately connected with the new conditions of extra-uterine life. The child is suddenly transferred from darkness to light; his eyes open, his nervous system is no longer in a state of repose, but is actively assailed by varied and frequently violent impressions; he enters a medium of a much lower temperature, and his own is therefore depressed—all these conditions, according to our present physiological knowledge, exert a stimulating influence over the general nutrition.

Recent investigations tend to show that in the light nutrition is more active. Referring the reader to the literature, already extensive, I will briefly state the results of the experiments of Fubini * and Platen.† Fubini noticed that frogs lost in weight if transferred from darkness to light, and that the opposite effect occurred if the conditions were reversed. Platen's experiments show that in the light the absorption of oxygen is increased by sixteen per cent., and the exhalation of carbonic acid by fourteen per cent. The light exerts a more powerful influence when the animal can see than when made blind. Weiske, Path, Schradt, and Kellner ‡ found that sheep eliminated more urea after shearing than before. The animals experimented upon were in the so-called state of nitrogen-equilibrium, and the amount of food remained the same. Langendorff noticed that optic impressions stimulated Setschenoff's centers, and that, if the animals were made blind, even slight impressions produced active reflexes. Optic and auditory sensations have a decided influence over our psychic life. Hallucinations and delirium were observed after the operations for cataract and during the prolonged solitary confinement § (Schmidt-Rimpler). Kowalewsky ‖ observed a constant fall in weight, reaching a number of pounds, after epileptic convulsions; losses of one or two pounds being noticed even after the attack of petit mal. These facts would warrant the conclusion that external impressions have a decided influence over the functions of the nervous system, and that the latter in its turn modifies the general nutritive processes. Caloric conditions are equally important. Aleksejeff ¶ made a number of thermometric observations on the fœtus in breech and face presentations. The fœtal temperature ranged from 100° to 103·3° F. (average 101·75°), while that of the mother ranged from 98·8° to 105·5° (average 99·6°). At birth the child is transferred to a much colder medium (60° to 75°), and its own temperature is, therefore, reduced. These conditions lead to a more active state of nutrition, as has lately been confirmed by Voigt ** and Carl Theodor, Duke of Bavaria. ††

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* "Med. Record," July 31, 1880.

† Gerhardt, Bd. i, p. 175.

‡ *Ibid.*, p. 553.

From what was said in the preceding pages, we may conclude that this transient period is characterized by a superactive nutritive exchange, insufficient nourishment, and, as the result, an asthenic condition of the nervous system. During the first weeks of his life the child may be said to struggle for his existence, but his forces frequently give out and he succumbs. "The fittest will survive," but not without having also suffered. The diseases with which the child is particularly apt to suffer are marasmus and gastro-intestinal and bronchial affections. Our efforts should be directed to sustain his forces, to aid the assimilation, and to see that he gets sufficient nourishment and is not exposed to cold. These conditions cause seventy-five per cent. of the entire number of deaths during the first five months.

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* Moleschott's "Untersuchungen zur Naturlehre," xi, p. 488.

† "Arch. f. d. ges. Physiol.," xi, p. 272.

‡ "Jahresb. üb. d. Fortschritte d. Anat. u. Physiol.," ii, 1876, p. 224.

§ "Arch. f. Psychiat. u. Nervenkrankh.," ix.

‖ "Vratsch.," 1880, No. 2.

¶ "Jahresb. üb. d. Fortschritte d. Anat. u. Physiol.," ii, 1876, p. 93.

** "Zeitschr. f. Biol.," xiv, p. 57.

†† *Ibid.*, p. 51.

The Second Period.—This is the period of normal nutrition. Its duration is from the seventh to the eighteenth week. It is the best period of the child's first year of life. If we could exclude the deaths of those children who, although they had survived the first period, yet poorly stood the strain of the preceding two months, we should find that the mortality for this period would compare favorably with that of any part of the first year. The child's growth in weight as well as in height is the most active, showing an excellent state of general nutrition,* and an absence of special causes of disease. If diseases occur, they are due either to exposure or to some fault in diet. The average rate of growth in weight during this period is about five ounces a week. The greatest growth in height is during the third month. The monthly curve (Chart II) shows a tendency in the child's growth to a gradual and regular decrease in energy. It is equal to two ounces a month, which does not differ materially from fifty grammes, the monthly decline, according to Bouchut.

If the reader will glance at the charts, he will notice that the remaining months are interrupted by three periods in which evidently the child's nutrition is depressed. They are the periods of disturbed nutrition caused by *dentition.* From Charts I and II it will be seen that the first dental period begins during the nineteenth week, and, with the exception of the twenty-fifth, twenty-sixth, and twenty-seventh weeks, lasts until the end of the seventh month. The second dental period lasts from the thirty-eighth to the forty-first week, and the third dental period runs from the forty-sixth to the forty-eighth week. In all, sixteen weeks are devoted to teething. During the first dental period the central incisors appear; the three weeks which interrupt it separate the appearance of the lower from that of the upper set. The lateral incisors appear in the course of the second dental period. So far, they correspond with almost mathematical exactness to the dates given in the text-books. The anterior molars appear some time from the twelfth to the fourteenth month. The third depression in my curve may correspond to this set of teeth, but, as the number of children under my observation was small, I am not sure if this dentition always occurs at this time.

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* Haehner's child took, during the seventh week, 880 grammes of milk, the largest amount, with the exception of the eighteenth and nineteenth weeks (883 and 888 grammes), during the first twenty-four weeks of his life.

This shows that dentition plays a very important rôle in the child's economy—we may say it is shaped and directed by this process. Consequently its importance in pædiatric pathology is not overestimated. It is admitted by all that dentition does harm not by the local process, but by the secondary disorders which occur so frequently in its course. They are called sympathetic and reflex disorders, and here the matter is usually dropped. On the other hand, not only the general practitioner, but also some specialists,* regard the dependence of these sympathetic affections upon the dental process with some degree of skepticism. We must acknowledge that this question, as it stands at present, is not very clear; and yet, from the peculiar behavior of the growth and the special liability to disease during the dental period, the fact itself is beyond doubt. The mortality record of the ante-dental and dental periods shows that diseases of the respiratory organs are twice as common during the latter. There is no material difference in the disposition to disorders of the alimentary canal, but they are now of a different type. Infectious diseases are much more common than at any time previous to or after dentition, and there is also an increased tendency to all other affections. Although the transient and dental periods have a number of features in common, they differ essentially with regard to one important point. During the first we have observed the lesions of nutrition and the disorders of the organs of assimilation; now we have a disposition to different local diseases, while the nutritive disorders hold a less prominent place.

The pathological rôle of dentition can be readily understood, if we consider the tooth, as it approaches the buccal mucous membrane, to be a source of irritation which, being transmitted to the nerve centers, alters their respective functions. The lesions in the sphere of the vaso-motor apparatus are the most important. They manifest themselves, on the one hand, in abnormal blood supply in various parts, and, on the other, in morbid vascular reactions to different irritants and impressions to which the parts are subjected. While, in a state of health, these irritants produce but slight results or none at all, during dentition, the soil being well prepared to receive the seeds of any disease, the reactions to them are more marked and entirely out of proportion to the primary cause; besides, the morbid processes are apt to assume a graver character than usual in consequence of the impaired vital resistance of the elementary tissues. Most conspicuous among these irritants and factors of disease are exposure to climatic influences, errors in diet, and infectious germs. They alone cause seventy-five per cent. of the mortality during the dental periods.

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* Gerhardt, "Lehrbuch d. Kinderkrankheiten," p. 12.

It would be highly unscientific to conceive that these "localizations" can occur without corresponding disorders in the sphere of general nutrition. In fact, the latter show themselves in advance, and serve as premonitory signs of some approaching local disorder. They are indicated by a well-known train of symptoms—sleeplessness, irritability, loss of appetite, functional disorders, etc. The child's weight is very slightly increased, or suffers moderate loss. After a variable period of time, when the whole machinery of the disease becomes complete, then only, as a rule, do the localizations make their appearance. (Serious symptoms are caused, in conjunction with the growing constitutional disorders, producing the sudden and great losses in the child's weight.)

As illustrations, I will give the behavior of the child's weight in a few instances: W. F., three months old; weekly fluctuations, in ounces, 6, 4, 7, 5, 5, 12, —3, 4, —4, 2, —2, —17 (severe attack of bronchitis), —2, 1, 2, 6, 8, etc. M. S., four months old; weekly variations, 6, 11, 5, 4, 2, —21 (attack of gastro-enteritis), 8, 13, 9, 9, etc. A. L., three months old; 3, 5, 4, 5, 4, 1, 2, 2, —2, —3, 0, 2, 4, 6, etc. These examples could be multiplied indefinitely, showing that, as a rule, the local diseases of the dentition period do not occur spontaneously, but after the system has been a sufficient length of time under the influence of irritation, and not until the proper changes, in the form of abnormal innervation, morbid sensitiveness of peripheral nerves, and increased irritability of reflex centers, have been produced. The whole reaches the climax as the tooth emerges from the gum; the nervous system then gradually and sometimes almost immediately resumes its equilibrium, and with it all local and general disturbances depending upon it disappear, and the child enters upon the *inter-dentition period*. Our efforts, then, should be directed to making the local process of dentition as easy as possible. The child must be guarded against exposure to the above-mentioned influences, and, as much as our therapeutic agents will allow it, we must relieve the injurious effects of dentition upon the nervous system.

During the inter-dentition periods the child's condition improves, he regains his health, and he grows more rapidly (at the rate of 3·5 ounces a week) in weight and in height. (Dr. Haehner's child gained during the fifth and tenth months 0·043 cm. daily, and during the eleventh and twelfth months, 0·071 cm. daily.) These intermissions are the wise provisions of Nature to allow the child to recuperate his strength and to prepare himself for a new trial. If they did not occur, the dentition period would be as deadly as the first month.

The study of the growth of children during the first year leads to the following conclusions:

Early childhood is composed of a number of distinct periods, of which the first is *the transient period*, when the child's nutrition undergoes a change from the normal intra-uterine to the normal extra-uterine type. The pathology of this period rests upon the inadequacy of the feeble and imperfect efforts of assimilation to meet the requirements of the energetic nutritive processes. The second period is that of *normal extra-uterine nutrition*. After this, there is a succession of three *dentition* and *inter-dentition periods*. The pathology of dentition rests upon the irritating influence of teething being transmitted to the nerve centers, producing certain disorders in the general and local nutrition, and leading to a disposition to disease, or constituting the actual morbid processes. During the inter-dentition periods, the child's health returns to the normal state. The growth of the child is not a process by itself, neither is it governed by its own laws, but is a faithful and correct representation of the child's general well-being. Consequently its great clinical importance should be recognized. As information derived from weighing the child relates mainly to the state of the *nutritive processes*, while the linear measurements give us information concerning the energy of *cellular life*, both methods should be used conjointly in the study of this branch of pædiatric physiology.

ON THE ETIOLOGY AND TREATMENT OF ACNE.

By LE GRAND N. DENSLOW, M. D.,
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Prefatory to the following remarks, it will be necessary to refer to the anatomy and physiology of the structures immediately affected by this disease. The sebaceous glands belong to the group of racemose glands, which occur over almost the entire integument; they are always limited to the corium, never extending to the subcutaneous cellular tissue, and are, as a rule, associated with the larger as well as the smaller hairs of the body, into the follicles of which they open, either singly or in groups. While the glands appear as lateral appendages to the larger hair follicles, the smaller or rudimentary follicles, on the other hand, appear rather as appendages to the glands. They consist of a gland structure, with a short excretory duct; they are supported by a dense connective-tissue investment, and contain epithelial cells, filled with fatty matter which it is their function to secrete.

The muscles of the striated variety pertaining to the skin, having very little if anything to do with the subject in hand, the mere mention of them is considered sufficient. On the other hand, I am of the opinion that it is quite the reverse with the involuntary muscles. The area of distribution of the involuntary muscular fibers is as follows: The arrectores pili occur in the form of bands, which arise from the hair follicles, immediately below and close to the sebaceous glands. They traverse the corium in an oblique direction, sometimes bending around, at other times partially enveloping, the sebaceous glands, and, according to Neumann, "occur either on one or on both sides of the hair follicle, frequently branch dichrotomously, and are distributed to the uppermost layer of the corium, immediately beneath the papillæ. The principal mass [Hauptstamm] subdivides into several fasciculi, which latter interlace abundantly, and form a network." "Others pass from the upper portion of the corium, to the panniculus adiposus, divide many times, and branch into horizontal and vertical fasciculi." "There are also fasciculi extending horizontally both above and below the sudoriparous glands. In the upper layer of the corium occur also horizontal broad extensions of the muscular fibers. On careful removal of the epidermis, and by making fine transverse sections, the course of these fibers under the papillæ can be distinctly traced."

The physiological action of these muscles, again according to Neumann, is as follows: "By the contraction of these muscles the blood is expelled from the capillaries, and forced from the surface to the deeper parts of the skin, whereby the temperature of the surface is diminished." The contraction also ceases on removal of the cause. "Further, the cutaneous muscles, which are distributed on the surface of the corium, shrink toward their points of insertion during the contraction of the skin; in the same manner the fasciculi, which extend transversely and vertically, also undergo considerable depression; the surface thus becomes contracted. Secondarily, as the result of the contraction of the organic muscular fibers, a considerable change takes place in the condition of the circulation; partly on account of the too powerful contraction, the stream of blood through the smaller arteries will be lessened, and partly, also, the return of the blood will be interfered with. The cutaneous muscles thus at the same time regulate the condition of the circulation, as also the augmented or diminished tension of the skin." "The secretions of the glands are doubtless influenced by these muscles, as by the contraction of the latter the secretions are expelled." The blood-vessels of the skin are derived from the arterial and venous branches of the subcutaneous cellular tissue, which send offshoots to the corium, the hair follicles, and the sebaceous and sudoriparous glands. In the corium there is a well-developed network of capillaries, which supplies the greater part of the papillæ with loops.

With this mention of the anatomy and physiology of the structures involved, we may now consider its practical bearing on the etiology and treatment of acne. Acne I define as a disease characterized by inflammation in or about the sebaceous glands, due either to a retention of sebaceous matter in the glands from over-secretion, or to accumulation of the same from inertia or inadequacy of the expelling force, also to a combination of these two causes. The last would seem to be most frequently the cause, as distention from accumulation would alone render inefficient the force which, before distention took place, was capable of emptying the glands of their normal product. In either case, when due to over-secretion or to inertia, the result to be obtained is the same—i. e., to place the expelling force on an equal footing with the amount of work to be accomplished. This expelling force I believe to lie in a great measure in the superficial unstriped muscular fibers of the skin, and the expulsion to be accomplished by their bringing direct pressure to bear on the glands themselves, and, through their alternate contractions and relaxations, regulating the superficial blood supply, thereby controlling, as well, that portion of it which maintains the proper amount of nutrition to the glands and to the vessels themselves.

Neumann and others, in their chapters on the anatomy of the skin, appear to have appreciated that these muscles "in a measure," affect the superficial circulation, and also, in some degree, the expulsion of the sebum, but no author that I have had access to has applied the knowledge of this fact when speaking of the etiology or treatment of acne.

It would appear that the unstriped muscular fibers become inadequate for their task under two conditions: First, at any time when an unusual activity occurs in the gland, and consequent abnormal secretion, as at puberty; also when there is local irritation from cold, heat, cosmetics, and the like. Secondly, when, from some physiological or other constitutional disturbance, their innervation and blood supply are interfered with to an extent sufficient to check their activity, causing inertia and consequent atrophy: among the special disturbances may be mentioned, puberty, menstruation, both normal and difficult, uterine diseases in general, and intestinal derangements; I say special, on account of the well-known intimate physiological connections which exist between these organs and the circulation of the face. No doubt this list could be augmented by as many more causes, both debilitating and reflexly irritative, as, for instance, mental derangements.

Many writers have described acne as a purely local affection; but several have considered that it is often but a secondary manifestation of some preëxisting irritation from either functional or organic derangements. Piffard* places it in the group of reflex affections, in consequence, as he says, "of a firm belief that in the great majority of instances it is not a primary condition, but one dependent upon irritation, derangement, or disease of other organs, reflected upon the skin, the special organs involved being those connected with the sexual and digestive systems." No one has as yet explained the manner in which this reflex action causes an inflammation in and about the sebaceous follicles, except by disturbing the superficial circulation; and, as there is no method whereby I can demonstrate to a certainty what I have said regarding the part which the involuntary muscular fibers of the skin take in the causation of acne, I am obliged to resort to clinical results to bear me out.

Having come to the conclusion that in a great many cases acne was persistent long after the primary cause had been removed, either from age or by recovery, I formed my present theory. Appreciating the action of ergot upon other unstriped muscular fibers, I began giving the drug continuously, in half-drachm doses of the fluid extract three times a day, upon the hypothesis that, if it would cause certain alternate contractions and relaxations in the muscles of the skin, they would soon regain their normal condition and strength, and at the same time tend to restore the superficial circulation to its normal condition. My expectations were more than realized, in that in all the cases improvement was speedy, and in one instance the disease has not yet recurred, although several months have elapsed since the cure of the disease. Two cases are especially worthy of note. One patient, a man about twenty-five years old, had suffered for six or eight years. Numerous scars showed the result of former inflammation and entire destruction of the glands, and when he presented himself his face was the seat of a very extensive, active pustular acne, with numerous abscesses. His general health was good, and his habits were temperate. Fluid extract of ergot was ordered, in half-drachm doses, three times a day. At the end of the first week, improvement was noticed, and at the end of the first month, the skin of the face had assumed almost its normal condition (scars, of course, excepted). At the end of the second month he was allowed to discontinue the ergot, and was asked to report in two months. This he did, and the disease had not reappeared. Since then he has not returned, although requested to do so if there was a relapse. In this case no application or other treatment was resorted to. The second case was that of a woman about twenty-five years old, a seamstress, who had suffered from acne on the nose, cheeks, and chin for the past five years, which within the past few months had been getting worse. Her general health was good, although she was rather anæmic, and her menstruation was scanty. Ergot was administered for two months, except during the menstrual weeks. At the end of the first month, the eruption had entirely disappeared from the nose and cheeks, and but a slight amount was left on the chin; in two weeks more this had disappeared. The patient wished to discontinue treatment, as she considered herself well. Iron was advised, and she has not been seen since.

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* "Diseases of the Skin," New York, 1876, p. 220.

I do not contend that these cases will prove conclusively the efficacy of ergot with all acnes, but they do show at least that this drug did have a marked influence over the condition in these instances, as I can hardly believe that such old cases recovered spontaneously. My desire is that the use of the remedy may be resorted to in a sufficient number of cases, in order that we may be able to judge more definitely as to its real merit. As an adjuvant to other modes of treatment, it may prove of service, and, if only temporarily controlling the inflammation, may save many a scar occurring, while the primary disease or condition is being combated. The conditions where ergot would be inadmissible will of course be appreciated, and the drug withheld. I am administering ergot now, alone and in combination with iron, quinine, and other remedies, as the case may seem to require, together with local and other general measures which seem to be indicated, and hope to be able, at a later date, to give more definite results, either pro or con. I would here mention that Dr. Stuart Eldridge,* of Yokohama, Japan, has used ergotine locally, by hypodermic injection, in acne rosacea with good results, but does not state why he was led to employ it. Electricity has been used locally as a stimulant with good results.† Both of these remedies I believe to act in a similar manner, as I have already stated, namely, by improving the condition of the superficial unstriped muscular fibers of the skin, thereby aiding in the expulsion of the sebum, and regulating the superficial circulation.

A REVIEW OF THREE ANOMALOUS CASES OF GLAUCOMA.

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In the April number of the "Virginia Medical Monthly," I reported three cases of glaucoma, interesting from the fact, then stated, that in the first two cases the disease seemed to have been produced by medicinal agents in constant use among ophthalmologists, while the third followed an ordinary operation upon the eye. Merely the facts connected with each case were recorded, while the manner in which the disease was developed was but vaguely hinted at. Applying the views of Priestley Smith, as stated in his article on glaucoma, its development in the cases reported is simplified; they become more interesting and instructive, illustrating as they do a new pathological era in glaucoma. Without further apology for repetition, the cases are offered as corroborative evidence of the correctness of Mr. Smith's views.

Case I.—A woman, twenty-five years old. Right eye. Circumscribed ulcerative keratitis. T+. A paracentesis of the cornea was performed. Instillations of a one-per-cent. solution of eserine sulphate, warm applications, and pressure were resorted to. Improvement ensued, and tension was reduced to T −1. Haziness of the cornea prevented a view of the iris, and, to guard against a possible iritis with adhesions, atropine was substituted for eserine. In a few hours after introducing the atropine violent glaucoma was produced, which yielded neither to eserine nor to corneal paracentesis, but required an iridectomy for its relief.

Experimental evidence points conclusively to the fact that the intra-ocular fluids pass out of the eye at the angle of the anterior chamber, by way of Fontana's spaces, to Schlemm's canal and adjacent veins. Hence, when this channel of escape is closed, intra-ocular tension increases, and glaucoma is developed. The appearance of glaucoma immediately after the use of atropine leads to a suspicion of that remedy as being the exciting cause; and a study of its action is confirmatory. Atropine paralyzes the sphincter pupillæ, while it excites the radiating fibers of the iris to contraction. This unopposed centrifugal contraction pulls the tissue of the iris together at the periphery of the angle of the anterior chamber, and thus tends to a closure of the latter. The lens is rendered less convex by atropine; consequently, its diameter is increased, and the circumlental space is encroached upon to a corresponding degree. Should the periphery of the lens, either from its size or from swelling of the ciliary processes, come into contact with the latter, communication would be cut off between the vitreous and the posterior chamber; accumulation of fluid behind the lens occurs, the lens is pushed forward, and the angle of the anterior chamber, before encroached upon, is now obliterated. Escape of the intra-ocular fluids being impossible, accumulation takes place, and the most intense glaucoma is produced. That the eye was of a glaucomatous tendency, and that anti-glaucomatous treatment was necessary *before* atropine was used, does not invalidate the theory advanced, but strengthens it. For eserine, the agent used, produces contraction of the sphincter pupillæ, and opens the angle of the anterior chamber by pulling the periphery of the iris away from the cornea. It also widens the circumlental space, by rendering the lens more convex. The intra-ocular fluids are thus allowed to escape, and an increase in tension is prevented. Atropine at once overcomes the effect of eserine, and places the eye in a condition of glaucoma. That neither eserine nor corneal paracentesis was beneficial is to be ascribed to the fact that closure of the angle of the anterior chamber was too complete to yield to either of these remedies. Iridectomy allowed the escape of aqueous, freed the iris, and favored disgorgement of the swollen ciliary processes—thus at the same time relieving the tension and remedying the defect which caused the outbreak of glaucoma.

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* "N. Y. Med. Jour.," Oct., 1879, p. 360.

† "Arch. of Dermatol.," ii, 2, p 164.

Case II.—A man, sixty-three years old. Right eye. Lens lies completely in the anterior chamber, having been dislocated into this position by a blow on the right temple received three months ago. The lens is cataractous, invested in its capsule, somewhat atrophied, and is movable. No disturbance whatever has been caused by the lens in its abnormal position. Removal of the dislocated lens having been decided upon, eserine was introduced, with a view of causing extreme contraction of the iris, which would thus furnish support from behind, and militate against the passage of the lens behind the iris. Pain was experienced in a few minutes, which increased in severity until it became excruciating. When seen the next morning, the globe was very hard (T+2). The iris was pushed forward, forcing the lens firmly against the cornea. Total relief ensued on removal of the lens and a portion of iris which became entangled with the knife used in making the section.

The attack of glaucoma was undoubtedly excited by the use of eserine. That the lens in its unnatural position, subjecting the iris to the constant irritation of its presence and movements, was insufficient to cause the development of glaucoma, is proved by the fact that no reaction resulted during a three-months' persistence of this condition. In this state of quiescence, eserine is introduced, and glaucoma at once follows. So long as the pupil was not contracted, its border corresponded to a peripheral and thin portion of the lens, and the lens, not entirely filling the anterior chamber, did not prevent the normal current of fluid from the posterior to the anterior chamber, and thence to the angle of the latter. Eserine contracts the pupil, bringing it into relation with the central or thickest part of the lens, at which point the posterior surface of the lens encroaches upon the iris plane, so that the pupillary border of the iris is here applied to the posterior surface of the lens, thus cutting off the communication which had previously existed between the anterior and posterior chambers. Further secretion of fluid only serves to make the closure more effectual, by pressing the iris forward against the lens, until the result detailed in the history is reached. Extraction of the lens effected a cure by removing the obstruction. The removal of a segment of iris was accidental and unnecessary.

Case III.—A man, sixty-eight years old. Left eye. Graefe's operation for cataract, with slight loss of vitreous, and retention of the angle of the iris in the sclero-corneal wound. The progress was favorable for two weeks, when pain was experienced, tension was increased, and a cystoid cicatrix appeared. This condition was combated by pressure and eserine. These proving inefficient, about a month after the operation, the cystoid cicatrix was snipped off, and the adherent iris was divided (?). This gave temporary relief. It was necessary, a month later, to perform a second iridectomy for persistent increased tension. Permanent relief followed.

At first sight, the development of glaucoma in an eye containing no lens, and in which an iridectomy had been performed, would seem to throw a doubt upon the correctness of the theory here advocated; but closer scrutiny refutes such an imputation, and strengthens the position assumed. In this case, the angle of the iris was firmly adherent to the cicatrix of the sclero-corneal wound. The position of this wound was anterior to the peripheral attachment of the iris and to the angle of the anterior chamber, and traction upon the iris in this direction would tend to close the angle of the anterior chamber, not only at the point of adhesion, but in all other localities in which the iris was free to respond to traction. Partial obstruction of the angle of the anterior chamber would give rise to just such a process as is described in the history, i. e., moderate but persistent increased tension, without well-marked glaucomatous symptoms. That the iridectomy performed during the cataract operation was not sufficient to maintain a free passage of fluid through the adjacent absorbing surfaces is to be accounted for by the supposition of an inflammatory condition of these parts, induced by irritation transmitted by the adherent iris. The first operation, which consisted in an attempt to divide the adhesion between the iris and cornea, was probably incomplete, and its beneficial action was but little more profound than that of a paracentesis would have been. The final operation freed the iris to such an extent that only that part of the iris corresponding to the corneal adhesion assumed a forward position, thus leaving ample space for the escape of fluid, and giving permanent relief.

These cases were treated at the Brooklyn Eye and Ear Hospital during my term as house surgeon in that institution, in the service of (I) Dr. Rushmore, (II) Dr. Wilson, and (III) Dr. Prout; and to these gentlemen I am indebted for the privilege of reporting them.

Lectures.

THE CARTWRIGHT LECTURES

ON THE ANTAGONISM BETWEEN MEDICINES, AND BETWEEN REMEDIES AND DISEASES.

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(*Concluded from January Number.*)

LECTURE IV.

CHLORAL AND STRYCHNIA; CHLORAL AND PICROTOXINE; CHLORAL AND ATROPIA; OPIUM AND VERATRUM VIRIDE; OPIUM AND GELSEMIUM; OPIUM AND ACONITE; MORPHIA SUBCUTANEOUSLY AND CHLOROFORM BY INHALATION, ETC.

THE discovery of chloral hydrate and the subsequent announcement of strychnia as its physiological antagonist, made by Liebreich,* have been followed by numerous researches, monographs, and clinical reports, so that the literature of chloral is already enormous. As we are now concerned in studying the antagonisms of chloral, I purpose reviewing the work done in this direction only. Liebreich demonstrated that animals in a deep stupor from chloral intoxication, the dose administered being lethal, were aroused, and death was averted, by strychnia. If, for example, two rabbits of equal weight—say three pounds—receive $\frac{1}{96}$ grain of strychnia sulphate, a fatal dose, and to one of them fifteen grains of chloral be also given, the former will die in tetanic convulsions in ten minutes, while the latter will sleep two hours or more quietly, and will wake up in a normal state. Such a striking exhibition would seem to be conclusive, but other observations are necessary. The most important and elaborate research, undertaken to determine the supposed antagonism of chloral and strychnia, is that of the Committee of the British Medical Association, Dr. J. Hughes Bennett, Chairman.† The Committee first, rightly, settled the lethal dose of each agent; they next ascertained the result of the simultaneous administration of chloral and strychnia; and then the result of the administration, at varying intervals, of one subsequently to the lethal dose of the other agent. Their general conclusions are as follows: "1. That, after a fatal dose of strychnia, life may be saved by bringing the animal under the influence of chloral hydrate; 2. That chloral hydrate is more likely to save life after a fatal dose of strychnia than strychnia is to save life after a fatal dose of chloral hydrate; 3. That, after a dose of strychnia producing severe tetanic convulsions, these convulsions may be much reduced, both in force and frequency, by the use of chloral hydrate, and consequently much suffering saved; 4. That the extent of physiological antagonism between the two substances is so far limited that (1) a very large fatal dose of strychnia may kill before the chloral has had time to act; or (2) so large must be the dose of chloral hydrate to antagonize an excessive dose of strychnia that there is danger of death from the effects of the chloral hydrate; 5. Chloral hydrate mitigates the effects of a fatal dose of strychnia by depressing the excess of reflex activity excited by that substance, while strychnia may mitigate the effects of a fatal dose of chloral hydrate by rousing the activity of the spinal cord; but it does not appear capable of removing the coma produced by the action of chloral hydrate on the brain."

A careful investigation of the supposed antagonism of chloral and strychnia has been undertaken by Husemann.* He holds that chloral is an antidote to strychnia, prevents the spasms, and averts death, and that it has a corresponding effect in the case of the strychnia bases sold under the name of brucin. One of the earliest attempts to ascertain whether the antagonism existed was that of Rajewski,† who found that chloral prevented or relieved the cramps caused by strychnia, and also to a certain extent the cardiac depression, but that strychnia was not in the same degree an antagonist to chloral. In a memoir on the treatment of poisoning by chloral, Erlenmeyer ‡ holds that, while chloral is useful to oppose some of the effects of strychnia, the converse does not hold good, and strychnia is not useful in chloral poisoning. The influence which Erlenmeyer's opinion might otherwise have is decidedly weakened by a statement made in this connection, intended to illustrate and enforce his views, that, while morphia is an antagonist to atropia in poisoning by the latter, atropia is not an antagonist in poisoning by morphia. Arnould,§ who has also investigated this question experimentally, regards the antagonism as more limited in scope than Liebreich has maintained. This question has also been studied by Professor Oré,‖ of Bordeaux, who concludes that strychnia rather promotes than prevents the poisonous action of chloral.

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* *Op. cit.*

† "Brit. Med. Jour.," Oct. 3, 1874, p. 437, *et seq.*

What is the teaching of clinical experience? I have found recorded seven cases of strychnia poisoning, in which chloral was the chief or only means of treatment employed. An equal number of cases I find in which chloroform inhalations were practiced successfully. Although the latter do not come within the range of the present subject, yet, as the effects of chloral are attributed by Liebreich to the disengagement of chloroform in the blood, they may serve to illustrate and confirm the former. Of the seven cases of strychnia poisoning, in which chloral was the chief or only agent used, all proved successful. No facts could be stronger. I am unable to find any cases of chloral poisoning in which strychnia was properly and adequately used, as it is in animals.

If we now sum up the evidence, we can not fail to be convinced of the antagonistic action of chloral and strychnia; but chloral is an antagonist to strychnia poisoning, rather than strychnia is an antagonist to chloral poisoning. The experience on rabbits shows that $\frac{1}{96}$ grain of strychnia is equivalent to fifteen grains of chloral. In the cases of poisoning in man, thirty grains of chloral subcutaneously was sufficient to allay the spasms and avert death from four grains of strychnia. But no absolute rule can be laid down, since the susceptibility to the action of these poisons varies greatly in different individuals. As in the published cases emetics were used, and in many instances the quantity of strychnia was merely estimated, no positive conclusions can be drawn from them. Artificial respiration materially retards the action of strychnia, and warmth, as Brunton * has shown, exercises a remarkable influence in lessening the effect of chloral. Thus "Dr. Brunton found that an animal wrapped in cotton-wool may recover perfectly from a dose of chloral which is sufficient to kill it when exposed to the cooling action of the air, and that recovery from the narcotic action is much quicker when the temperature is maintained in this way, and still more rapid when the animal is placed in a warm bath, provided this is not excessive." Heat would therefore seem to be an antagonist to chloral, and for an obvious reason, for heat increases the action of the heart, and thus opposes the depression of the heart, which is a main factor in the toxic effects of chloral. In the treatment of the toxic effects of strychnia by chloral, the amount of the latter administered should be determined by the symptoms. Sufficient chloral should be given to suspend the strychnia spasms, for the danger consists in the stoppage of respiration by tetanic fixation of the respiratory muscles. The amount required for this will, doubtless, vary within considerable limits, as I have already intimated. In the case of the Sioux Indian, treated by Dr. Turner,† the quantity of strychnia was not known, but the return of the spasms from time to time required repeated doses of chloral, one hundred and five grains in all being given within five hours. When strychnia is used against chloral poisoning, the objects to be accomplished are different. By stimulating the cardiac and respiratory centers with strychnia, the tendency to cardiac and respiratory failure is prevented. The quantity required will be determined by the effects; but it is probably much less than theory indicates. The initial dose may be $\frac{1}{60}$ grain, and each succeeding dose $\frac{1}{120}$ grain, which may be repeated every half hour, or more frequently, until an approximation to the maximum is reached.

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* "Antagonistische und antidotarische Studien." "Arch. f. exp. Pathol. und Pharmacol.," vi, p. 345.

† "Centralbl. f. d. med. Wissensch.," 17, 1870, p. 261.

‡ "Prakt. Arzt," xiv, p. 11. Quoted in "The Practitioner."

§ "Presse Méd. Belge," 1870, No. 9, p. 69. Quoted by Husemann.

‖ "Bull. Gén. de Thérap.," lxxxiii, p. 403, *et seq.*

We have next to study the physiological mechanism, or to as-

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* "Jour. of Anat. and Physiol.," May, 1874, No. 14.

† "Med. and Surg. Reporter," June 15, 1872.

certain how the opposition of actions occurs. A preliminary statement of the main facts in the physiological actions of each will indicate the antagonistic points. Chloral, with or without a brief stage of excitement, induces a sopor closely related to normal sleep, and, in lethal doses, coma and insensibility. It therefore in toxic doses suspends the cerebral functions. It acts in the same way on the spinal cord; it suspends the reflex functions and motility, but sensibility is not destroyed until the cerebral functions are suspended. It does not impair the contractility of muscle or the irritability of the motor nerves. The action of the heart is enfeebled, the arterial tension is lowered, and a very considerable reduction of temperature is caused. The respiration is slowed, then made irregular and shallow, and finally arrested. Death is caused by paralysis of the heart or of the respiration, or by the simultaneous arrest of both functions. Strychnia does not affect the cerebrum, consciousness being retained until carbonic-acid narcosis comes on. It exalts the reflex faculty of the spinal cord, and is a motor excitant. It stimulates the respiratory center and the cardiac motor ganglia, and raises the arterial tension.

Chloral and strychnia can hardly be regarded as antagonistic in their actions on the functions of the brain, since chloral suspends them, and strychnia does not affect them in any way. In one respect they have opposed effects—chloral producing cerebral anæmia and strychnia rather increasing the intra-cranial circulation. On the spinal cord the antagonism is very complete—chloral suspending the reflex and motor functions of the cord and strychnia exalting both. Strychnia stimulates the respiratory and vaso-motor centers in the cord, and thus opposes and counteracts the most dangerous tendency of chloral narcosis. The chief danger from strychnia—the tetanic fixation of the muscles of respiration due to the exalted reflex function—is removed by the action of chloral. This antagonism is more certain and effective than the opposite one, or the stimulation of the chloralized spinal cord by strychnia; whence it follows that chloral is a more useful antagonist in strychnia poisoning than is strychnia in chloral poisoning.

CHLORAL AND PICROTOXINE.

Professor Husemann, in the course of his important researches on the antagonisms of chloral, finds that picrotoxine must be included among those agents (like strychnia, the strychnia bases known as brucin or brucia, and thebaia, the tetanizing alkaloid contained in opium) which are antagonized more or less completely by chloral. The only published researches on picrotoxine and chloral of any value are those of Dr. J. Crichton Browne, of the West Riding Lunatic Asylum. It may be necessary to state that picrotoxine is the active principle of cocculus indicus, is not properly an alkaloid, and does not combine with acids to form salts. As regards its physiological actions, it has distinct deliriant and stupefying effects on the cerebrum, and causes epileptiform or tonic and clonic convulsions, followed by coma and insensibility. The reflex functions are suspended by it; finally, the motor nerves lose their irritability, and the sensory nerves are early affected, their power to transmit peripheral impressions disappearing in the beginning of its action. Respiration and the pulse-rate, at first, for a brief period, are increased, and the temperature also slightly rises, but this preliminary excitement is soon followed by depression—by lowered temperature. After the convulsions especially, the pulse becomes feeble and irregular, and the respirations shallow and arhythmical. A comparison of the physiological effects indicates antagonistic action on the cerebrum and spinal cord, but not on the heart and circulation. A study of the experimental evidence leads to the same conclusion. Dr. Browne, after an elaborate investigation, summarizes his views as follows:* "Chloral hydrate is physiologically antagonistic to picrotoxine in rabbits and guinea-pigs, and may save life when administered fifteen to twenty minutes after a fatal dose of the latter. There is no antagonism exerted between these two agents on cats, death being caused by paralysis of the heart, a result in which both participate."

No corresponding observations exist in cases of accidental poisoning in man. Picrotoxine is not used with criminal intent, and its scarcity renders accidental poisoning unlikely. It is highly probable, however, that the convulsions and cerebral excitement produced by picrotoxine would be prevented or relieved by chloral. It is doubtful, however, whether the stupor and insensibility induced by chloral would be relieved in the same degree as by strychnia. The experiments of Dr. Browne show that picrotoxine is to a "very limited extent antagonistic to chloral." An examination into the mechanism of the antagonism shows that it must be confined to a few points—to the cerebrum and to the reflex, motor, and sensory functions of the spinal cord, and does not extend to the heart and to the respiratory organs.

CHLORAL AND ATROPIA.

The antagonism of chloral and atropia was, I believe, first studied by myself, and the results were presented in a paper read before the Neurological Society of New York, in 1875. It has also been the subject of a special study by Husemann,* to a limited extent by Fothergill, and has been discussed in a clinical lecture of Volkmann's series by Falck.† Both of these agents have been sufficiently set forth in the whole range of their physiological powers, and need not therefore be presented anew. On the brain and spinal cord they are antagonistic to a limited extent. Atropia lessens the sleep-producing power of chloral, and therefore opposes the depression of the respiratory and vaso-motor centers produced by chloral. On the spinal cord they act in a different, and in some respects, in an opposed manner. The effect of atropia on the spinal cord and nerves is complex. On the cord it has a tetanizing action, and exalts the reflex irritability; on the motor nerves, a paralyzing effect; and it lessens the irritability of the sensory nerves. Chloral suspends the reflex function of the spinal cord, and causes a paralysis which is purely spinal, since the irritability of the motor nerves and the contractility of the muscles are left intact. While chloral and atropia are antagonistic in their action on the cord, they both produce motor paralysis. A most obvious and important antagonism exists between the actions of these agents on the circulation and respiration. This is confirmed by experimental trials on animals and by clinical observation on man. I have always found it to be the case in my experiments on animals, and Husemann's experiments demonstrate the same truth. Owing to the fact that, in animals, the more powerful and preponderating action of these agents on the brain prevents the antagonism on the heart and lungs exerting the salutary effect it has in man, only rarely do the experiments succeed in averting death from lethal doses. Husemann narrates a striking case of the accidental use of atropia in poisoning by chloral. A man took from 20 to 24 grammes (300 to 360 grains) of chloral hydrate, was profoundly chloralized, and, as his pupils were minutely contracted, it was supposed that the narcosis was due to morphia. Acting on this supposition, an injection of 1½ milligramme (about $\frac{1}{40}$ grain) of atropia was practiced. Neither the pupil nor the respiration was affected. Faradization with the electric brush, mustard plasters, cold douche to the head and breast, and other measures were resorted to besides; but the beneficial influence of the atropia is regarded by Husemann as hardly doubtful.

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* "Brit. Med. Jour.," 1875, i, p. 542.

While the good effects of atropia in preventing death from chloral by failure of the heart's action, or of the respiratory function, are probably very great, the converse is not necessarily true. Although there are no experimental or clinical facts, it must be evident that chloral can act only as morphia does under the same conditions, i. e., moderate the strain on the cardiac and respiratory centers produced by the excitant action of atropia. This is a less important service than that rendered by atropia in chloral narcosis, but is, nevertheless, highly useful. The dose of atropia in chloral narcosis and the frequency with which it is to be repeated depend on the effects produced. A small dose, repeated at short intervals, until the characteristic effects on the pupil, mouth, heart beat, and respiration are produced, and then awaiting the antagonistic action, is better practice than the administration of a large dose at once. The return of reflex sensibility, the improvement in the pulse and respiration, and the dilatation of the pupil are the evidences that the antagonist is producing good effects. When these results are obtained, all that the antagonist can effect is done, and hence to persist in the further use of it, unless the maintenance of the effect is necessary, is to add atropia poisoning to chloral narcosis.

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* *Loc. cit.*, p. 443.

† Dr. Ferd. A. Falck. "Der Antagonismus d. Gifte." "Samml. klin. Vortr.," von R. Volkmann, No. 159, 1879.

In his research on a supposed antagonism between thebaia and chloral, Husemann found that this antagonism existed to a limited extent. Chloral, however, only intensifies the effects of morphia and codeia. In a number of experiments on this point, I have found that morphia and chloral are synergists, or promote each other's activity, and that they can be more safely administered by combination with atropia, which counteracts the cardiac and respiratory depression caused by them, and which constitutes the great danger in their use in man, as in the inferior animals.

THE ANTAGONISTS TO THE CARDIAC AND RESPIRATORY DEPRESSANTS.

We have now reached a very interesting and important department of our subject. From the physiological and clinical point of view alike, it is most useful to know the mutual interactions and reciprocal relations of those remedies which act on the lungs and heart. It is by the extension of our knowledge in this direction that we may hope by various combinations to improve the curative powers and enhance the safety of administration of these important remedies.

Let us first consider *opium and veratrum viride.* It has long been known to practical physicians in this country that the tincture of opium counteracts the depression of the circulation caused by veratrum viride. I can not trace this fact to its original source. The first example of opium poisoning treated by veratrum viride I have been able to find, is that of Dr. J. S. Todd,* of Georgia. A man took with suicidal intent an amount of laudanum equivalent to forty grains of crude opium. The treatment of the opium narcosis consisted in the administration of emetics, which did not act, however, until long after complete absorption; the subcutaneous injection of atropia until the pupils were fully dilated; and the subcutaneous injection of whisky and tincture of veratrum viride. Six drops of tincture of veratrum viride were administered, in all, hypodermically. So many agents being jointly used, it is difficult to assign to each its exact share in the result. Dr. Todd holds that the atropia did no good, and to the veratrum viride he mainly attributes the recovery. Dr. Haldeman,† of Zanesville, Ohio, reports successful cases of the treatment of opium narcosis by veratrum viride. There has been no published experimental evidence submitted in support or disapproval of the popular professional opinion in regard to this antagonism. During the past summer and fall I made a number of observations, on rabbits chiefly, at my laboratory in Jefferson College. I ascertained first that the minimum lethal dose of fluid extract of veratrum viride (U. S. P.) was three minims to the pound weight. This produces nausea, some diarrhœa, weak pulse, labored respiration, and convulsions, death occurring from suspension of breathing. To this quantity of veratrum viride three to five minims (according to the weight of the animal) of Magendie's solution of morphia (gr. xvi–℥j) seems to be antagonistic. When used in the proper proportion, the nausea and vomiting, the muscular paresis, the paralysis of the respiratory muscles and the labored breathing, the feeble action of the heart, were all prevented, and the life of the animal was preserved. When the effects of the morphia preponderate, the pupil becomes minutely contracted, drowsiness deepening into stupor, and morphia convulsions come on, but the effects produced by veratrum viride disappear. Corresponding observations were made on frogs. The antagonism between opium and veratrum viride is clearly established, but the distance apart at which their effects are exerted has not been definitely ascertained—most of the experiments being performed by the simultaneous administration of the two agents. I found, however, that the antagonism was exerted after ten and twenty minutes, but further experiments must be made, to learn if it is sufficient at a longer interval. It is further ascertained that, whether opium be used against veratrum viride, or veratrum viride against opium, the antagonistic action is equally displayed. The cases narrated by Dr. Todd, of Georgia, and Dr. Haldeman, of Ohio, are apparently conclusive as to the existence of the antagonism in man.

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* "Am. Jour. of the Med. Sci.," Jan., 1873, p. 131.

† "Cincinnati Lancet and Clinic," 1879, and 1880, p. 465.

We are next concerned to ascertain its nature or mechanism. Is there an explanation afforded us in the physiological actions of the two agents? Veratrum viride does not affect the mental functions, but causes cerebral anæmia; opium produces excitement of the mental functions, quickly followed by stupor, coma, and insensibility. Veratrum viride depresses the vaso-motor functions, lessens the arterial tension, and lowers the temperature of the body; opium in doses less than lethal, especially in the form of morphia used subcutaneously, stimulates the vaso-motor functions, raises the tension of the arterial system, and does not reduce, but maintains, the temperature. On the heart muscle veratrum viride acts as a direct depressant, and on the respiratory muscles as a paralyzer; opium in doses less than lethal has a great power to maintain the heart and respiration. Veratrum viride increases secretion generally, the saliva and sweat especially; opium diminishes secretion usually, but under some circumstances increases perspiration. Veratrum viride is a paralyzer by depressing the motor spinal functions, the motor-nerve trunks and the muscles remaining intact; opium in less than lethal doses opposes rather than promotes the paralyzing effects of veratrum.

I can not too strongly insist on the difference in the action of medicinal and lethal doses of opium. In employing opium against the toxic effects of veratrum viride, no good can result from the administration of such doses as will rather approximate the effects of opium to those of veratrum viride. It should be kept in mind that it is the stimulating effect of opium which renders it an antagonist to veratrum viride. No absolute rule as to quantity can be prescribed with certainty. Referring to the clinical experience now available, we obtain practical data to serve for a decision of the question. In the case of an infant three weeks old, poisoned by four or five drops of laudanum, two and three fourths drops of tincture of veratrum viride dispelled the narcosis. An adult female, aged thirty, took a quantity of laudanum, supposed to be about two ounces, and was in a condition of profound narcosis, respirations only 3½ a minute, when six drops of veratrum viride tincture were injected subcutaneously. In a half hour she could be roused, but lapsed back immediately into a comatose state, and, as she could then be induced to swallow, three drops of the tincture were given every two or three hours by the stomach until she recovered entirely, which occurred in a few hours. The whole amount of the veratrum viride administered did not exceed fifteen drops of the tincture. In a case reported by Dr. Sholl, of Alabama, a negro boy took an overdose of morphia, prescribed for the hiccough of typhoid fever, the quantity not stated. The usual narcosis followed, and eighteen drops of Norwood's tincture of veratrum viride were administered, with the remarkable effect that in one hour the symptoms of poisoning had disappeared. Dr. A. Sheller also reports a case in which profound narcosis, produced by the administration of 1⅔ grain of morphia within eight hours, was relieved entirely within a few hours by the use of thirty drops of Tilden's fluid extract of veratrum viride.* Unfortunately the details in these cases are not exact, but one patient certainly received a lethal quantity, and the others may or may not have recovered without assistance. Notwithstanding these defects in the details of the reported cases, the proof of the utility of the veratrum viride seems conclusive. Clinical experience is thus in accord with the results of experiment. If further investigations confirm them, the antagonism of opium and veratrum viride will take high rank for the efficiency and extent of its range.

Opium and Gelsemium.—The actions of gelsemium are similar to those of veratrum viride, but they differ also in important particulars. Gelsemium is more distinctly a paralyzer. It causes dropping of the upper eyelid, dilatation of the pupil, and diplopia, by paralyzing the third nerve. The cerebral effects are vertigo, drowsiness, and stupor; but no disturbance of intellect results from it, although a comatose state is brought on by carbonic-acid narcosis. Gelsemium paralyzes respiration, this function ceasing before the heart's. It is not an arterial sedative, as usually supposed, the depressed circulation being secondary to the respiratory depression. The paralyzing action of gelsemium is spinal, since neither the motor nerves nor the muscles are affected. It is obvious that opium, in ordinary medicinal doses, antagonizes the actions of gelsemium, prevents the respiratory and cardiac depression, and averts death, unless the nervous centers are entirely overwhelmed by the amount of the poison. In a case of poisoning by gelsemium narrated by Dr. George S. Courtwright,† we have a striking example of the curative effect of the antagonist. A physician took by mistake, in the dark, what he supposed was a teaspoonful or two of the tincture of cinchona, but proved to be the tincture of gelsemium. In half an hour he began to experience the paralyzing effects, had the drooping eyelids, the dilated pupil, the hanging jaw, the labored respiration, and the weak pulse produced by gelsemium. The physician called in, Dr. Courtwright, recognizing the similarity of this to belladonna poisoning, at once injected morphia subcutaneously. The quantity used was estimated at one half to three fourths of a grain, and this was repeated in three minutes, at the end of seven minutes, and again at the end of eleven minutes, making four injections, or two grains of morphia, hypodermically. Besides this, he was given half a grain of morphia when able to swallow. After the third injection, "he partially raised his arm, and with an effort, and by an assistant holding up the lower jaw, he said, 'Be spry.'" In two hours the paralysis ended, and the Doctor was able to give an account of the accident. It is hardly doubtful that a tablespoonful of the tincture of gelsemium had been taken, for a less quantity could not produce such severe symptoms. The amount of morphia used in antagonism seems rather excessive, but, as it was estimated, it is probable the amount actually administered was less than supposed. The very remarkable improvement which followed the injection of morphia is a striking evidence of the completeness and fidelity of the antagonism on man.

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* Haldeman, "Cincinnati Lancet and Clinic," Aug., 1879.

† "Cincinnati Lancet and Observer," xxxvii, 1876, p. 961.

I have pursued the same line of research with morphia and gelsemium as with morphia and veratrum viride. On rabbits, the lethal dose of the fluid extract of gelsemium (U. S. P.) is about five minims to the pound weight. The antagonism is admirably shown on the pupil, on the respiration, and on the action of the heart, but I have not been able to avert death from the cerebral effects of both. The entire disappearance of the symptoms due to gelsemium is first seen, but then come on the cerebral effects of morphia, and convulsions usually terminate life. In man, as we have seen, owing to the extent and complexity of the cerebral structures, the effects of morphia are diffused into the higher centers and therefore not expended on the lower centers alone.

Morphia in the same way antagonizes the depressing effect of *aconite* on the respiration and on the heart. Although in the inferior animals, as is the case with the other members of the same group, the lethal effects of both agents are exerted, the antagonism is conspicuously exhibited in the support of the heart and the maintenance of respiration. Clinically, the same facts have been repeatedly observed, and, in cases of accidental use of aconite in poisonous quantity, death has been averted by the timely administration of opium or morphia. As the facts already set forth in regard to the opposed actions of opium and veratrum viride are equally applicable to opium and aconite, further discussion of the latter may, therefore, be unnecessary.

Morphia and Cocaine, Theine, Caffeine, and Guaranine.—One of the most interesting, if not one of the most important, of the researches undertaken by the Committee of the British Medical Association is that series to determine a supposed antagonism between morphia, on the one hand, and the alkaloids of tea, coffee, coca, and guarana, on the other. It was found that the physiological action of these alkaloids was practically identical. They produce "cerebral excitement, succeeded by coma, when the quantity is large; loss of sensibility, which is partial when the dose is small, complete when the dose is large; tetanic spasms and convulsions; paralysis of the posterior columns of the spinal cord and the peripheral sensory nerves, leaving the anterior columns and the peripheral motor nerves unaffected; at first increase and finally diminish the force and frequency of the cardiac contractions, and first irritate and then paralyze the vaso-motor nerves." It is obvious that morphia antagonizes some of these actions, and promotes others. Empirically, strong decoctions of tea and coffee are employed in opium poisoning, because it is a matter of common experience that these infusions cause wakefulness. Cases of opium narcosis, produced by a quantity barely sufficient to induce lethal effects, have been relieved by these means alone, but usually other measures of greater activity are employed. The researches of the committee demonstrate that there is some foundation for this popular opinion. They find that theine is antagonistic to meconate of morphia, and that the action of one so far modifies that of the other as to save life after a fatal dose of either.

Morphia and Chloroform.—As paralysis of the heart or of the respiration, or, it may be, the simultaneous depression of both functions, is the mode of dying by chloroform and by other anæsthetics used for the same purpose, it is extremely desirable to possess an agent which will antagonize and prevent this fatal tendency. I do not, I believe, exaggerate the fact, when I state that we possess such an agent in the subcutaneous injection of morphia. It is an extraordinary circumstance that surgeons have been so indifferent to the remarkable results obtained by the employment of mixed anæsthesia. Claude Bernard, and, about the same time, Nussbaum, the one in his laboratory, the other in the clinical theatre, demonstrated the great utility of the anæsthesia procured by the injection of morphia and the inhalation of chloroform—"mixed anæsthesia." Although the methods of Bernard * and of Nussbaum are usually supposed to be the same, they differ—Bernard administering the morphia a few minutes before beginning the inhalation, and Nussbaum giving it after the inhalation is well under way. In this country, the method of "mixed anæsthesia" was advocated some years ago by Professor William Warren Greene. Last year the subject was again brought forward in an admirable memoir, by Dr. J. C. Reeve,* of Dayton, Ohio. In France, interest in the subject has lately greatly revived, and several theses have appeared—the most important being that of Dr. S. Bossis.† In my "Manual of Hypodermic Medication," the first edition of which appeared in 1867, I called attention to this important subject, citing the observations of Bernard and Nussbaum.

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* "Bull. Gén. de Therap.," lxxvii, p. 241.

Morphia and chloroform act on the same cellular elements of the brain, and agree in the production of anæsthesia, but they are opposed in their action on other structures and organs—an opposition which renders their combined use safer. When morphia is injected subcutaneously before the inhalation of the anæsthetic has begun, the irritability of the bronchial mucous membrane is so far diminished as to permit the inhalation to proceed quietly; the stage of excitement is prevented, and consequently the danger of the asphyxia which occurs under these circumstances; the nausea and vomiting, which interfere with the progress of the inhalation and which may indirectly produce serious consequences, are also obviated; and the stage of narcosis is prolonged without the need of further inhalation. The after-pain, the nausea and vomiting, and the systemic depression which result from the inhalation of the anæsthetic, and the sometimes dangerous syncope, are also in a large measure prevented. By a careful adaptation of the relative proportions of chloroform and morphia, a state of insensibility to pain without loss of consciousness is induced. In the words of Bossis—"There may be obtained in man, with a little attention, by the combined action of chloroform and morphia, a state of complete insensibility to pain, with preservation to a partial extent of the intelligence, of the tactile, auditory, and visual sensibility, and of the voluntary movements. From the practical point of view, the analgesia obtained by the combined action differs completely from the demi-anæsthesia caused by the employment of chloroform or ether singly, in that it is not preceded or accompanied by a period of hyperæsthesia with violent excitement, and the tendency to exaggerated reflex arrests of the heart and after syncope."

Clinical experience with the "mixed method" seems to support the deductions of experiment in regard to the antagonistic action of morphia to the cardiac and respiratory failure induced by the anæsthetics. A large experience is necessary to settle the question, however, and the failures which may result from pathological conditions of the organs concerned must be eliminated. There can be no doubt, however, from the experience thus far accumulated, that morphia, by the method of Bernard, greatly facilitates the induction of anæsthesia and lessens its dangers. I have maintained that for this purpose the combination of morphia and atropia should be preferred to morphia alone, because of the power of atropia to stimulate both heart and lungs. It might be supposed, on superficial reflection, that atropia would be better than morphia, but it should be remembered that stimulation has its inevitable reaction. Morphia has a power of support not possessed by atropia. When administered together under the circumstances, the evil effects of both are antagonized, and the power of both to support the heart and respiration is utilized. The quantity of morphia should rarely exceed one fourth of a grain, and that of atropia, one one-hundredth of a grain. The method of Bernard should be preferred to that of Nussbaum, because it facilitates the inhalation, and not less secures the advantages of the "mixed method."

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* "Trans. of the Ohio State Med. Soc.," for 1879.

† "Essai sur l'Analgésie Chirurgicale," etc., Paris, 1879.

Strychnia as a Stimulant of the Respiratory Function.—The importance of atropia as a special stimulant of the respiratory function has been frequently alluded to. The resemblance in the spinal actions of atropia and of strychnia has been manifest in the study of these agents. Atropia, in therapeutical works, is sometimes suggested as an opponent and antagonist of strychnia; it is so placed in Gubler's "Commentary on the French Codex." Hardly any statement could be more fallacious. In some experimental investigations made some years ago, I found that atropia intensified the effects of strychnia, and hastened death by contributing to the tetanic fixation of the muscles of respiration. We find that strychnia stands next to atropia as a stimulant to the respiratory function. Through the heightened reflex activity of the spinal cord and of the respiratory centers in the medulla, strychnia causes death by spasm of the respiratory muscles and asphyxia. It must therefore antagonize those agents which, like aconite, cause death by paralysis of the respiratory muscles. This supposition is confirmed by experiment. In an interesting series of experiments to test this antagonism, Dr. Fothergill found that a lethal dose of aconitine was entirely overcome by a quantity of strychnia twice as great as the lethal. The animals given the aconitine alone died; the same animals receiving the aconitine with the strychnia, in previous experiments, recovered. The existence of the antagonism is therefore undoubted.

An opposition of actions has been determined to exist between *strychnia and nitrite of amyl.* These substances act in an opposite manner on the nervous system of animal life and on the sympathetic system. Amyl nitrite suspends the reflex function of the spinal cord and causes paralysis of the muscular system, and death ensues from paralysis of the respiratory muscles. The most characteristic effects are those on the heart and the arterial system. It depresses the arterial tension to the lowest point, and increases greatly the action of the heart, a necessary result of the enormous dilatation of the peripheral vessels. The reflex and spinal effects, the cardiac and arterial disturbance, are the opposite of those produced by strychnia. From the physiological standpoint, then, an antagonism must be presumed to exist between them. An experimental research by Dr. Gray,[*] of Glasgow, strongly supports this view. Thus, he found that one fourth of a grain of strychnia proved fatal usually to the rabbits which he used for experiment. He was able to administer half a grain of strychnia and ten drops of the nitrite of amyl simultaneously, by subcutaneous injection, without any marked disturbance following. Of course, further investigations are necessary, but sufficient is now known to justify the inhalation of nitrite of amyl in cases of strychnia poisoning.

An antagonism to a limited extent has been discovered by Dr. Fothergill between *aconite and digitalis.* The rate at which these agents are diffused throughout the organism differs so widely that it is necessary, in order to display the antagonism, to administer the digitalis from five to nine hours before the aconite. Besides the interesting fact of the antagonism, this subject is important because of the additional light—if additional light were needed—thrown on the actions of digitalis. In some of Dr. Fothergill's experiments, "aconite was given to frogs with their hearts contracted by digitalis; in others, digitalis, where the heart was paralyzed by aconite. The aconite did not exercise a very marked effect upon the hearts contracted by digitalis, but the other experiment was more successful. . . . Slowly and gradually the distended ventricle recovered itself under the action of digitalis, the contractions being more rhythmical and perfect, and the distention less and less pronounced, until a return to normal was brought about." A lethal dose of aconitine was antagonized in rabbits by digitaline given a sufficient time before. This slowness in the action is a well-recognized quality of the remedy, and its elimination from the organism seems equally tardy.

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[*] "Glasgow Med. Jour.," 1871, p. 188.

Between *digitaline and saponine* an antagonism of considerable extent has been traced by Köhler.* Saponine being comparatively little known, some account of its origin and actions may be a necessary preliminary. Saponine is a glucoside, obtained from saponaria officinalis. It has close relationship to our indigenous polygala senega, and the active principle, senegin, which is probably the same as Quevenne and Procter's polygalic acid, is the same in composition as the glucoside principle, saponine.† The important actions of saponine are its irritating effects on the mucous membrane, producing violent sneezing when applied to the nose; its power as a cardiac poison, arresting the heart in diastole; and its activity as a muscular poison in general. Locally, it has the effect of arresting the heart. Owing to the difference in the rate of movement, the antagonism is exerted after the time requisite to develop the activity of digitaline. A heart arrested by saponine will be started by digitaline, and *vice versa.* Further investigation of saponine, as against atropia and strychnia, will doubtless develop very interesting facts.

To round-off and complete the study of digitalis, I should not fail to mention the investigations of Boehm in regard to the antagonism between this agent, on the one hand, and muscaria and aconite on the other. Boehm found that when the heart was arrested by digitalis it was restored to action again by the administration of muscaria and aconite. Digitalis acts chiefly, as has been pointed out, by stimulating the apparatus of inhibition; muscaria and aconite affect this apparatus in the opposite way, relaxing the grip, as it were, of the inhibition, and permitting freedom of movement. I think you must agree with me that these studies are of great importance, if they had no other purpose, in illustrating the action of digitalis, and, indeed, the mechanism of the cardiac movements.

A very interesting cardiac poison, in regard to which but little is known, is *phytolacca decandra.* This agent arrests the heart in diastole, and long before the motor and reflex functions and the respiration have ceased. The sensibility of the sensory nerves is lessened by poke, but the irritability of the motor nerves and the contractility of the muscles are not impaired by it. It is a spinal paralyzer. The power to arrest the heart is due to a paralyzing action on the motor ganglia, but it also affects the *cardiac* muscle. When the heart is arrested by the fluid extract, and some portion of it is allowed to come in contact with the heart itself, the paralysis is so complete that no form of irritation, including a strong faradaic current, can arouse it to action again. The heart thus remains insensible, when the muscles everywhere respond energetically to the faradaic stimulation. More slowly, but finally as completely, is the heart paralyzed by the injection of the fluid extract into any part of the body. Respiration ceases, with paralysis of the muscles, long after the heart has stopped its beat.

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* "Arch. f. exp. Pathol. u. Pharmacol.," i, p. 138.

† "Die Pflanzenstoffe," p. 750.

I find that atropia antagonizes these effects of phytolacca completely. It maintains the cardiac action, so that lethal doses of poke do not prove fatal when administered with atropia. The mechanism is obvious. Atropia stimulates the accelerator nerves of the heart and the motor ganglia in the muscular substance; phytolacca exerts a paralyzing action on the same apparatus. The antagonism is exerted not only when they are simultaneously administered, but when the second is given after an interval of fifteen minutes. The number of experiments made was twenty, and included both cold- and warm-blooded animals.

I have recently conducted, and am still engaged on, an elaborate series of experiments with *viscum album*, the mistletoe, for the study of its physiological actions and its antagonists. It is a cardiac tonic, and exalts the vascular tension. The sensibility of the sensory nerves is much diminished by it, but the irritability of the motor nerves is not impaired. The cardiac and respiratory depressants are its antagonists, especially such as aconite and veratrum viride. Further researches promise interesting disclosures.

In discussing the question of the antagonism of chloral and strychnia, I incidentally alluded to the cases of strychnia poisoning treated by chloroform or ether inhalations. I ought not to conclude this part of my subject without some references to this topic. The anæsthetics suspend the reflex functions of the spinal cord, and cause death by the final arrest of respiration and circulation. They are therefore antagonistic to those remedies which exalt the reflex functions—as strychnia, brucin, thebaia, picrotoxine, etc. Ten cases of strychnia convulsions treated successfully by the inhalation of ether or chloroform are reported. The anæsthetic suspends the heightened sensibility, and thus maintains the functions which would otherwise be over-stimulated until the elimination of the poison is accomplished. What is true of the treatment of strychnia poisoning is also true of poisoning by the other agents acting similarly. The antagonism of the anæsthetic group with the tetanizing group of remedial agents is therefore supported by experimental and clinical evidence.

With the antagonisms discussed in this lecture, rather hastily, as the limits of the course will permit no fuller treatment, I close this part of the subject—or the antagonism between medicines. I have yet to discuss, in the remaining lectures, that large and important practical subject—the antagonism between remedies and diseases. In my next lecture, I shall therefore begin the consideration of this topic, which will not only enforce the lessons derived from the study of the physiological antagonisms between medicines, but will, I hope, demonstrate a path which we may surely follow in the treatment of many diseases.

LECTURE V.

THE ANTAGONISM BETWEEN REMEDIES AND DISEASES.

Some diseases are cured by contraries, was the aphorism of Hippocrates, but, he was also wise enough to add, some are cured by similars. It was obvious enough, even at that remote time, that no single law or dogma could include all the varied conditions of disease. The doctrine or law of antagonisms is necessarily applicable only to the state of physiological pathology—if I may be permitted such a phrase—and not to structural pathology, unless remediable by physiological processes. For example, the pathological state induced by fluxionary hyperæmia may be removed by agencies acting on the vessels in the opposite way. A cachexia or diathesis, as the cancerous or tubercular, sclerosis of organs, etc., can not be affected by opposed or similar remedies, yet some important symptom, occasioned thereby, may be acted on, as, for instance, fever, which may be subdued and its ill effects prevented by the proper use of some antagonist to the fever process.

The limits being thus set to our inquiry, we may proceed to investigate the nature and extent of the antagonism which may exist between a remedy and a disease, or between the actions of a remedy and the symptoms of a disease. As the antagonism between remedies has been treated mainly in the historical order, it will be best to begin with the first historical example of the treatment of a symptom of a diseased state by its physiological antagonist—the treatment of paralysis by strychnia.

STRYCHNIA AND PARALYTIC STATES.

As I have already shown, we owe our present knowledge of strychnia to the labors of Magendie, whose research was so thorough that subsequent investigators have been able to add but little to his results. This pioneer investigation—the parent of all the important work which has since been done in this field—is a striking illustration of the permanence of the results thus obtained, and is in strong contrast with the variable and fleeting opinions, the product of empirical methods. Fouquier and Magendie, recognizing the opposition of actions between the new poison and paralysis, proposed to prescribe it when suitable cases occurred, but Fouquier had the good fortune to meet with suitable cases before the discoverer. Since that trial of strychnia has occurred all the known experience with this important agent. Strychnia exalts the reflex functions of the spinal cord, and is, therefore, properly the antagonist of those conditions of disease in which this function is weakened. Strychnia also energizes the heart and raises the arterial tension, by stimulating the vaso-motor system, and therefore opposes all actions from disease of a contrary kind. Strychnia, further, is a powerful stimulant of the respiratory function, and causes death by asphyxia—by so stimulating the muscles of respiration that they become tetanically contracted, and is, therefore, the antagonist of those symptoms indicating respiratory depression. Let us see, now, how nearly clinical experience with this remedy corresponds to the deductions of theory. Diphtheritic paralysis is an excellent illustration and type of the paralysis to which the action of strychnia is opposed. It is largely a functional paralysis. Although some structural changes have been made out in the spinal-nerve roots, they are remediable under the changed conditions wrought by an antagonistic medicine. No one will dispute, I think, that strychnia is the most important remedy for this disease, and that improvement promptly follows on its administration. Furthermore, it is obvious that strychnia will produce the better results, the more it is concerned with sound tissues. Hence, measures to improve the nutrition of the body will increase the utility of strychnia.

The so-called reflex paralyses are clearly antagonized by strychnia, and they are especially benefited by its administration. It is probable that reflex paralyses are often due to anæmia of the motor center, which ceases to act because, reflex impressions causing strong contraction of the arterioles, the amount of blood normal to the part is no longer received by it. That strychnia produces rather a hyperæmic state of the cord and motor centers generally, while it also stimulates them to greater activity, can hardly be denied.

The power of strychnia to give energy to the cardiac movements and to raise the arterial tension is not made use of in medical practice as it should be. Degenerative changes in the cardiac muscle and coincident low tension of the vascular system are conditions antagonized by strychnia in the weak heart. Exhausting hæmorrhage, the action of the heart being weak and the vascular tension low, also is a combination to which the action of strychnia is opposed. I find that Fordyce Barker* gives nux vomica tincture in considerable doses, in conjunction with ergot, for the arrest of postpartum hæmorrhage. The effect of nux vomica is most appropriate, because so exactly antagonistic to the conditions present; it stimulates the cardiac and respiratory centers, and, by raising the tension in the vessels, checks the flow of blood.

Modern experience has in a similar way made use of strychnia in the treatment of depressed states of the respiratory organs, by a merely empirical method. The wide-spread popularity of Aitken's phosphate of iron, quinine, and strychnia, not only as a general tonic, but as a remedy for incipient phthisis, is due largely to the constituent strychnia. It has come to be recognized that strychnia is a respiratory stimulant, and of special utility in chronic bronchitis, in asthma from paresis of the diaphragm, and in emphysema with dilated right cavities of the heart.

SPASM AND THE PARALYZERS.

The relation in which strychnia stands to paralysis is comparable to that of the paralyzing agents to spasm and cramp. The first physiological research to determine the existence of muscular irritability was the memorable study of woorara by Bernard. This is the only remedy which has apparently exerted a curative influence on hydrophobia. Woorara—or one form of the poison possessing these properties—destroys the irritability of the end organs of the nerves in the muscles, leaving the muscles themselves intact. But it also depresses and suspends the reflex functions of the spinal cord, and paralyzes respiration. Hydrophobia produces symptoms in opposition to these, and hence they should cease on the exhibition of woorara. Unfortunately for any certainty in results, this agent varies much in composition, and in hydrophobia a peculiar virus is present, which does not, apparently, diffuse out of the blood, but continues in action, death occurring from exhaustion, if not from the spinal effects of the poison. That two well-defined cases of hydrophobia should get well during the administration of woorara affords us reason to hope that better results may be obtained hereafter from a more uniform and stable preparation, or from a new agent acting similarly. Tetanus is a better type of a spasmodic disease than hydrophobia. No similitude in the action of a remedy and the symptoms of a disease can be greater than between strychnia and tetanus, and this resemblance extends to their behavior under the influence of opposing remedies. As the tetanic symptoms produced by tetanus proceed from a peripheric irritation—a wound—and those due to strychnia are the result of an impression made through the blood on the center—the cord, receiving simultaneously two impressions from different sources, should be strongly inhibited and the impressions neutralize each other. Such would be an adequate explanation of the result, if tetanus were cured by strychnia. As it is not, we have a striking illustration of the fallacies in the ancient doctrine of similars. There are six remedies which have been used with success in the treatment of tetanus: chloroform by inhalation, chloral, tobacco or its alkaloid (nicotin), bromide of potassium, physostigma, and gelsemium. How much soever these agents may differ in other points of action, they agree in the power to diminish or suspend the reflex functions of the spinal cord. They therefore act in opposition to this distinctive symptom—an aggravated reflex sensibility. The success which attends the administration of these agents is not the same, since they differ in the exactitude with which they oppose the morbid complexus. In poisoning by strychnia, the same group of remedies comes into use. Chloral, as we have seen, is a very efficient antagonist, and the inhalation of chloroform seems equally so.

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* "The Puerperal Diseases." New York, 1874.

When the convulsions are of the epileptiform type, some antagonists that have a similarity of action, and also some acting in the opposite way, are employed. Picrotoxine represents the former, and potassium bromide the latter. In epileptiform seizures, an abnormal excitability of Nothnagel's spasm center may be presumed to exist, and hence those agents acting against clonic convulsions must have the power to diminish this abnormal excitability. Agents having a similarity of action stimulate the spasm center, but, as inhibition results when two impressions coming from different points are made on the spinal cord simultaneously, so here quiescence, or the normal equilibrum, is the result, when the disease impression and the medicine impression act on the spasm center at the same time. As picrotoxine rather increases cerebral hyperæmia, if it exist, and promotes the intra-cranial circulation when weak or deficient, it is obviously adapted to those states characterized by anæmia and depression. On the other hand, bromide of potassium produces its best effects when the subject rather tends to plethora, and when the intra-cranial circulation is too active. No fact with regard to the action of bromide of potassium is more distinctive than its power to arrest symptomatic or epileptiform convulsions due to the presence of a neoplasm. When a tumor develops in the brain, there is always present a very considerable degree of cerebral hyperæmia. The abnormal excitability of the spasm center may, indeed, be chiefly due to this increased blood supply, inducing an excessive functional activity. Although under such circumstances the convulsions are prevented, no modification of the disease is effected—an illustration of a fact that the antagonism is exerted, if at all, between a symptom produced by the disease and a symptom produced by the remedy, although the cause of the disease symptom may continue unaffected by the remedy. During the administration of the bromides in epilepsy, the condition of the faucial reflex affords an indication of the state of the spasm center. Thus, Voisin has shown that, when no movement is caused by touching the base of the tongue, the pillars of the fauces, and the walls of the pharynx, the effect of the bromides is sufficient. A capital application of the principle of antagonism, as exhibited in the opposition of the action of a medicament to an important symptom of a disease, is the use of the nitrite of amyl to abort the epileptic paroxysm. It is known to all here present, of course, that the epileptic paroxysm is inaugurated by a sudden deathly pallor, in which the arterioles of the brain are strongly contracted, and an extreme degree of anæmia is induced. Then follows the tetanic stage, with suspension of respiration and cyanosis. By the timely inhalation of amyl nitrite, these phenomena may be prevented and the fit aborted. No sooner is a whiff of the vapor inhaled than the arterioles are dilated, and a bright flush takes the place of the pallor, the stage of rigidity does not come on—in fact, the epileptic paroxysm, which was imminent, fails to develop.

The principle of antagonism applies equally to the treatment of chorea. The most successful treatment is that having for its objects the maintenance of a quiescent state of the motor centers and the prevention of those irregular discharges of nervous force which constitute the physiognomy of the malady. Those who maintain that quiet, repose, the absence of all possible sources of excitement, are sufficient for the cure, are seeking to accomplish, by merely hygienic means, the same end which those are pursuing who administer calmative medicines. By chloral, by the large doses of morphia prescribed by Trousseau, by cimicifuga, by conium, etc., the excitability of the motor centers is lessened; in other words, the mobile state of the nerve matter is opposed by agents which lessen and finally suspend all motor activity.

In certain neuroses of the respiratory and circulatory organs, the phenomena of antagonism are exhibited in perfection. Here, indeed, is an embarrassment of riches. We are concerned at present with those disturbances of functions characterized by the occurrence of spasm or cramp. In this category are included paroxysmal cough, cough by habit, hiccough, whooping-cough, spasmodic asthma, angina pectoris, etc. Cough, as everybody knows, is a reflex act, in which many parts participate besides the breathing organs. Experimental evidence coincides with the clinical in fixing on the bronchi as the seat of the maximum excitability to this reflex act, and especially at the bifurcation of the trachea, according to experiments. Let us take *laryngismus stridulus* for illustration. Irritation of the sensory filaments of the pneumogastric in the mucous membrane, transmitted to the nucleus, is reflected over the motor branches, and the muscles are thrown into cramp. Hence the resounding cough. To prevent this reflex act is the object of treatment, and those agents having this power—chloral, bromide of potassium, nauseants, etc.—promptly relieve the spasm. Cough maintained by habit, whooping-cough, and paroxysmal coughs are effectually treated only by those remedies which oppose the exaggerated reflex excitability, such as hydrocyanic acid, gelsemium, conium, morphia, chloral, etc. Spasmodic asthma affords a superior opportunity for the trial of the various motor and reflex depressants—the antagonists of the disease symptoms. The inhalation of ether, the subcutaneous injection of morphia, belladonna, tobacco, grindelia, faradism or galvanism, are used as antagonists with more or less success, but the selection of an antagonist is necessarily involved in obscurity, owing to the uncertainty which still surrounds the mechanism of the asthmatic paroxysm.

Singultus, or hiccough, affords us an apt illustration of both modes of antagonism—by similarity and by opposition. In singultus, a recurring spasm of the diaphragm is supposed to be the condition. I have already shown that this disease may be arrested by a spasm-inducing agent—a rapidly interrupted faradaic current. If a strong current be passed at the moment the spasm is to take place, it is entirely aborted. The mechanism has been explained before, but it is so striking an exemplification of one mode of inhibition that it will bear repetition. The reflex spasm does not take place, because of the strong irritation of the peripheral fibers, inducing inhibition. The remedies acting by opposition are those which lessen and suspend reflex action, as the anæsthetics, morphia, bromides, amyl nitrite, chloral, etc. Another admirable illustration of antagonism of a spasmodic state, and at the same time an example of scientific therapeutics, is the treatment of angina pectoris by the inhalation of amyl nitrite. We owe this ingenious suggestion to Dr. Lauder Brunton, who, ascertaining that in angina pectoris there ensued sudden strong contraction of the arterioles, manifested in pallor of the surface, small strong pulse, labored action of the heart, etc., proposed the inhalation of amyl nitrite to overcome this contracted state of the vaso-motor fibers; and the suggestion has been most successful, giving prompt relief in a condition of imminent danger. Sudden contraction of the arterioles of a member, of the fingers, or other part of the body, the tissues so affected appearing dead-white, and losing their sensibility, occurs in young girls and in women at the climacteric period. Bromide of potassium promptly removes this state by relaxing the vaso-motor fibers.

PAIN AND THE ANODYNES.

The same principle of antagonism obtains in the treatment of pain. The sensation which we call pain is composed of several elements: of the peripheral irritation, the transmission of the impression to the center, and its realization by consciousness. It follows that pain may be relieved by interrupting its transmission to the centers of conscious impressions, or by suspending the functions of those centers. For example, aconite and gelsemium relieve pain in the former, and the anæsthetics in the latter mode. When aconite is applied to the peripheral filaments of a sensory nerve, the power to transmit the sensation of pain is gradually extinguished, and in poisoning by aconite there is ultimately reached a condition in which no pain is experienced from any form of irritation. Aconite is therefore antagonistic to peripheral neuralgia. The anæsthetics, locally applied, have similar effects, and are therefore antagonistic to both centric and peripheral neuralgia. When a few minims of chloroform are thrown into the neighborhood of a nerve trunk, the peripheral expansion of the nerve is put into an anæsthetic and analgesic state. The deep injection of chloroform for sciatica, cervico-brachial neuralgia, coccyodynia, and neuralgia of nerves in accessible situations, is an expedient of the highest value. Since I brought this method forward a few years ago, I have had a large experience of its use in sciatica, neuralgia of the infraorbital and supraorbital branches of the fifth, and intercostal and cervico-brachial neuralgia, and can reaffirm with emphasis my original statements. Some foreign experience has been equally favorable. This method is adapted more especially to the cases of some weeks' or months' duration, and to those—it can not be too often repeated—situated in nerves accessible to the treatment. To inject chloroform under the integument, as morphia and other anodynes are injected, is simply useless, unless the affected nerve be in the neighborhood. This expedient is the more valuable, since no danger attends its use, and inflammatory indurations and abscesses rarely result. The most powerful means for the relief of pain which we now possess—the hypodermic injection of morphia and atropia combined—is an illustration of the utility and advantage derived from the study of physiological antagonism. The mutual interactions of morphia and atropia are such that, while the pain-relieving power is not impaired but enhanced by combination, other signal disadvantages of each are compensated for in the action of both. Physiological research has further shown that the advantages of anæsthesia are promoted by the preliminary injection of morphia, and that "mixed anæsthesia" is both more effective and safer. Chloroform certainly should not be administered, under ordinary circumstances at least, without the preliminary injection of morphia and atropia. A sudden death from paralysis of the heart, in a case of ether narcosis which happened in London last month, ought to warn us in regard to the fancied security against cardiac paralysis from ether inhalation, which Schiff especially has inculcated. We ought to recognize the fact that the condition of anæsthetic sleep is a condition of danger, which is merely relative in respect to the agent used, and employ antagonists to the fatal tendency—paralysis of heart or lungs. The antagonist on which, it appears, much dependence may fairly be placed is the subcutaneous injection of morphia and atropia. The danger which attends the administration of chloral may be to a large extent averted by the simultaneous prescription of atropia, as some recent cases of accident unequivocally show.* I several years ago demonstrated, in a paper read before the Neurological Society, of New York, that, while morphia and bromide of potassium intensified the effects of chloral in every way, atropia antagonized the effects on the heart, and would thus apparently save life after lethal doses. I then also called attention to the danger of the combination of chloral and potassium bromide as a poison to the heart, which the subsequent experiments of Husemann † and abundant clinical experience have since confirmed.

MENTAL STATES AND THEIR ANTAGONISTS.

The antagonism of a mental state by the action of a remedy implies the fact that the mental is a mere symptom of a physical condition. Those who believe otherwise are indeed few in number, and constantly diminish as the progress of our means of minute research develop more and more fully the dependence of symptoms on lesions. The antagonism of insomnia to sleep-producing medicinal agents is conspicuously demonstrated in the action of chloral. Acute delirious mania, and acute mania, when due to physiologico-pathological states, and not dependent on unchangeable structural lesions, are antagonized by the same agent, and often speedily cured by its timely exhibition. High excitement, with illusions and hallucinations, and great motor activity, are antagonized by gelsemium, duboisia, hyoscyamia, conium, and other remedies acting similarly. Melancholia, with torpid movements, and suicidal notions, is antagonized by morphia. Acute cerebral congestion, of the active form, is opposed by such arterial sedatives as aconite, veratrum viride, and potassium bromide; and acute congestion, of the passive form, by digitalis, ergot, etc. Anæmia of the brain is removed by strychnia, brucia, atropia, quinia, and other excitants. It follows that mental changes dependent on these vascular states must be largely controlled by the timely use of the appropriate antagonist. Closely allied to those conditions is that state of the vessels disposing to the formation of miliary aneurisms. It may appear a fanciful speculation to suggest that these changes preparatory to cerebral hæmorrhage, or affecting the nutrition of the brain unfavorably, may be retarded, possibly prevented, by the early use of such agents as ergot, digitalis, quinia, chloride of barium, etc. Although the nutritional alterations in the vessel walls precede the formation of miliary aneurisms, the progress of the changes is promoted by the relaxation of the muscular layer. Agents which improve the vascular tonus have, therefore, the important action of retarding the nutritive changes.

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* "Allg. med. Centr.-Zeitung," July 21, 1880.

† *Loc. cit.*, p. 335; also the same author, in "Dtsch. med. Woch.," No. 36–39, 1880.

CARDIAC REMEDIES AND DISEASES.

In the whole pathological field there are no more perfect illustrations of the applicability of physiological antagonism to the therapeutics of disease than in the case of the various heart maladies. The most exact antagonism has been shown between remedies acting on the heart. We shall now see similar exactitude in the antagonism between remedies and diseases of the heart. Is the action of the heart excessive from a diminution in the energy of the inhibition? We have remedies to oppose this state. Is the heart acting too slowly from excess in the inhibition? We have remedies to counteract this defect. Is the heart acting too rapidly from excess of energy descending through the accelerator nerves? We have remedies to diminish the production of this energy. Is the heart acting feebly from a paresis or weakness of the accelerator apparatus? We have remedies to give tone and increased power to this apparatus. Is the heart acting feebly from weakness in its motor ganglia? We have remedies to impart strength. Is the heart acting too violently and irregularly, because of too great and frequent discharges of force? We have remedies to moderate this violence and restore the rhythm. Let me briefly illustrate these points in turn.

In that singular malady, exophthalmic goître, the action of the heart is constantly much too rapid, and is often exceedingly so, from the diminution in the inhibitive control of its movements. The carotid and the vessels of the thyroid gland are relaxed and dilated, and hence this gland may pulsate almost like an aneurism. This condition of things is the essential change. It is true, in all advanced cases the heart is the seat of various structural alterations, but these are not necessary to constitute the disease. If exophthalmic goître is treated by the antagonists to that condition of the heart and vessels before the structural alterations above mentioned occur, it is usually curable. These remedies are galvanism (to the pneumogastric and cervical sympathetic), digitalis, and ergot, which increase the inhibition and the vascular tension, substituting a slow and orderly movement for the wild disorder of the disease. In some maladies, such a strong inhibitive influence descends along the pneumogastric that the heart is restrained, tied up, and its movements are greatly retarded; again, the heart may be slowed by agencies paralyzing the accelerator apparatus or the motor ganglia. If the physician, influenced by the fact of the slow movement, prescribed without reference to the mechanism, he might do serious mischief. The excess of inhibition is overcome by such an agent as aconite, which depresses the function of the inhibiting nerve; the paralysis of the accelerator apparatus or of the motor ganglia is overcome by the stimulants of these organs, of which atropia is the best representative. Palpitation of the heart may be caused by irregular and explosive discharges of nervous force coming from the accelerator nerves, or from paroxysmal loss or depression of the inhibition. In the former case, such an agent as bromide of potassium, and in the latter as digitalis, is required. When the action of the heart is weak from depression of the accelerator apparatus, atropia stimulates this apparatus and antagonizes the conditions which result from it. The most important antagonist to states of depression is digitalis, provided certain conditions are observed. I am the more urgent in presenting this point because I believe the use of digitalis is carried much too far in the treatment of cardiac weakness. Digitalis increases the inhibition, slows the heart by lengthening the diastolic interval, energizes the heart muscle, and, by increasing the force of the recoil, favors the passage of blood into the coronary artery. Digitalis also raises the arterial tension. Long-continued medicinal doses, and, in a very short time, lethal doses, exhaust the irritability of the apparatus on which their effects are expended. In a case of poisoning, reported by Mazel,* a woman of twenty-five died of paralysis of the heart on the fifth day after poisoning by digitalis, her pulse meanwhile having risen from 40 to 65. Traube has shown that large doses of digitalis paralyze the pneumogastric, and hence the pulse thus becomes exceedingly rapid. When a patient, lying recumbent, is taking a course of digitalis, the pulse may be reduced to 40 a minute; but, on assuming the erect posture, it becomes very rapid and weak. The practical deductions from these observations are, that digitalis must be given in moderate doses, and not too rapidly, owing to the prolongation of its effects. In the condition of fatty heart, its use is more than doubtful, owing to the fact that it decidedly increases the arterial tension and thus imposes additional work on the heart. Digitalis opposes the conditions present when mitral lesions disturb the normal work of the heart. The organ is weak and acts quickly from relaxation of the inhibition; the arterial system has relatively much less and the venous system much greater than the normal quantity of blood; the arterial tension is low, and the venous tension is too high, relatively and absolutely. Digitalis opposes these conditions when used in the proper quantity. It increases the energy of the cardiac contractions, readjusts the distribution of blood by raising the tension in the arterial system and by increasing the power of the heart beats, and so lengthening the diastolic interval as to permit more blood to enter the left cavity. Moderate doses, too frequently repeated, or large medicinal doses, will exhaust the irritability of the apparatus on which digitalis acts, and it will then cease to antagonize the symptoms against which it was prescribed.

The antagonism between remedies and disease is well exhibited in the treatment of aneurism by medicinal means. By slowing the blood current, and diminishing the caliber of the peripheral vessels, blood coagulates in the sac, the clot organizes, and a cure is effected. After learning the success of Hildebrandt in curing uterine fibroids by the subcutaneous injection of ergotine, Langenbeck bethought himself of the treatment of aneurism by the same means. His notion appears to have been that ergot, causing contraction of the muscular fiber of the aneurismal walls, gradually compressed the sac and thus effected a cure. It has been urged, accordingly, that ergot injections could be of no use in cases of aneurism of the aorta since this vessel contains no muscular coat. Those making this objection are apparently unacquainted with the fact that the solidification of the sac is caused by coagulation of the blood in it, and that the conditions most favorable to such coagulation are a slow action of the heart and increased tension at the periphery—produced by the injections of ergot. In the arrest of hæmorrhage the same principles obtain. Who now trusts to opium and acetate of lead, to tannin, to sulphuric acid, and the medley of ancient astringents? Modern pharmacological research has placed in our hands the most efficient remedies—antagonists to the conditions producing hæmorrhage. Increased action of the heart and relaxation of the vessel walls are the conditions to be antagonized in hæmorrhage, and the most effective remedies are ergot, digitalis, potassium bromide, veratrum viride, etc. The subcutaneous injection of ergotine is the most speedy and certain means of arresting pulmonary hæmorrhage. Menorrhagia is usually more promptly arrested by bromide of potassium. These remedies may usually be given in combination: bromide of potassium and digitalis by the mouth; ergot subcutaneously. The application of cold and heat in the arrest of hæmorrhage is based on the same principle. Cold causes immediate contraction of the arterioles, but relaxation follows; heat, on the other hand, first relaxes, but contraction soon follows, and is more energetic than that at first produced by the contact of cold.

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* "Gaz. des Hôp.," 1864, No. 74.

RESPIRATION REMEDIES AND DISEASES.

The function of respiration is affected by remedies that depress and by remedies that excite. The action of those remedies employed against the neuroses of the respiratory organs has been sufficiently elucidated. As regards the remedies depressing the respiratory function, it is sufficient to remark that the only purpose to which they can be properly applied is to impose rest on the breathing organs, by diminishing the number and lessening the excursions of the respiratory efforts. Important results have been claimed from the use of conium and gelsemium in pneumonia, but grave doubts must exist as to the accuracy of the observations. In respect to the stimulants of the respiratory function, much good results from their timely use. Strychnia, as has been pointed out, is a respiratory stimulant of great activity and of much value in suitable cases. In some cases of emphysema and chronic bronchitis, and in the carbonic-acid narcosis due to respiratory failure in acute pulmonary affections, it is antagonistic and of special utility. Probably no remedy so generally prevents the reflex nausea and vomiting of consumption. There is none but a theoretical warrant for the statement, yet it seems probable that much good might result from the hypodermic injection of strychnia in capillary bronchitis, when hæmatosis is suspended and carbonic-acid narcosis comes on, and in pneumonia, when abortive attempts at crisis are made. The utility of strychnia in chronic bronchitis and bronchorrhœa is attested by an immense experience.

Atropia is a more generally useful respiratory stimulant than strychnia. It is much employed in certain neuroses of the lungs, but its chief utility consists in its power to increase respiration when depressed from a variety of causes. Atropia not only stimulates the respiratory center, but it diminishes the irritability of the sensory nerves of the lungs, and increases the circulation through these organs. These properties, more than its power to arrest night-sweats, must be the secret of the influence possessed by it over the nutrition of the lung. In many cases of caseous pneumonia, before the process of softening and extension of the caseous matter has begun, atropia distinctly benefits the local lesions and improves the general state.

INTESTINAL REMEDIES AND DISEASES.

The action of antagonistic medicines is well exhibited in the diseases of the intestinal tube. A serous diarrhœa is promptly arrested by belladonna. Opium suspends intestinal movements and stops secretion; it therefore relieves conditions of an opposed kind, namely, diarrhœa and dysentery. Constipation due to torpor or paresis of the muscular layer of the bowel is often promptly cured by the faradaic current. When the muscular layer is paretic, and secretion is deficient, the relief afforded by opposing agents is very remarkable. The agents antagonistic to this condition of things are nux vomica, belladonna, and physostigma; and, if given in combination, they will oppose and remove it.

REMEDIES ACTING ON THE SKIN.

In the night-sweats of consumption, atropia, duboisia, hyoscyamia, and other members of the group oppose the conditions present and dry the skin. The value of this treatment is great because of the immense loss of material taking place through the skin. Sometimes the remedies acting by similarity, as Dover's powder, pilocarpine, picrotoxine, etc., are useful, but at present the only indication for their employment is the failure of the other agents. The remedies acting by opposition succeed much more frequently and permanently. A deficiency in the amount of cutaneous secretion may require the use of sudoriparous medicines. Pilocarpine stands at the head of the agents of this class. Picrotoxine has considerable power as a sudorific, but it is far inferior to pilocarpine. Local sweating, as of one extremity, of one side of the head, or elsewhere, is usually arrested by the local application of atropia or belladonna. The milk gland, being a sweat gland modified and enlarged for this special office, is acted on by antagonists in a manner similar to the skin. Pilocarpine increases the flow of milk; atropia diminishes and arrests it.

REMEDIES ACTING ON THE KIDNEYS AND BLADDER.

The functions of the skin and kidneys being to a certain extent vicarious, the activity of one necessitates a diminution in the activity of the other. Those remedies acting on the skin antagonize the stimulants of the renal secretion. A state of lessened activity of the kidneys is opposed by those agents having a special action as diuretics. Substances excreted by the kidneys and acting as irritants promote the urinary discharge—as copaiba, cubeb, turpentine, etc.—but these are not proper antagonists. Remedies such as digitalis and squill, which increase the pressure in the renal vessels, and also directly stimulate the secretion, are the proper antagonists to the state of diminished activity. Recent investigations tend to show that diuretics of this kind do not, as was supposed at one time, affect the kidney tissues unfavorably, but rather retard than hasten chronic changes. Excessive urinary discharge, as in diabetes insipidus, may be due to passive cerebral congestion, of a limited area —the floor of the fourth ventricle, for example—and then is checked by such an agent as ergot, which acts by contracting the vessels.

Very admirable results are obtained in vesical irritability by the appropriate and timely use of antagonists. There is a form of vesical irritability in women, especially, which is often admirably relieved by the use of tincture of cantharides. In this form, there occurs an excessive intolerance of the presence of urine in the bladder, but the mucous membrane is unaffected and the urine is unaltered. Tincture of cantharides induces a similar irritability. The mechanism by which relief is effected is the inhibitive result of two impressions on the genito-spinal center. Two bodies can not occupy the same place at the same time, and two impressions coming from different points, and of equal volume, neutralize each other. If the same irritability of the bladder coincides with a catarrh, or the presence of a stone, it need hardly be stated that cantharides will not afford relief. Furthermore, the dose of cantharides tincture necessary to afford relief is the quantity required to cause some irritability of the organ.

The treatment of nocturnal incontinence of urine is most effective when based on antagonism of action. This malady serves to illustrate an important principle, although of slight importance itself. To give a presumed antagonist without reference to the associated conditions, is to invite failure. The incontinence may depend on weakness and relaxation of the sphincter. When a certain amount of urine accumulates, the sphincter is unable to withstand the pressure. In other cases the mucous membrane is intolerant, and a sense of fullness is communicated to the center, and an impulse originates for the expulsion of the urine, the act occurring in a dream. This state is often connected with abnormal acidity of the urine. In still other cases, the muscular layer of the bladder is in an irritable state, and energetic contraction ensues whenever the urine accumulates sufficiently. For the first condition, the most usual probably, belladonna and ergot are the proper antagonists; for the second condition, bromide of potassium and alkalies; and for the third, such remedies as gelsemium, conium, chloral, etc., are most appropriate. This malady, then, demonstrates how, in the search for antagonists, we must carefully study the physiological pathology of the disease. The conditions of the disease being known, the character of the remedy should follow.

With this general survey of the organs and systems of the body, I conclude the first part of the second division of my subject. In the next and final lecture of the course, I have to discuss the most important of the practical relations of this subject to the treatment of diseases, namely, the application of the principle of physiological antagonism to the therapeutical management of general or constitutional states.

LECTURE VI.

ANTAGONISM BETWEEN REMEDIES AND DISEASES.

It must seem evident to those who followed my last lecture, or who have given any independent thought and investigation to the subject, that the treatment of local maladies is governed largely by the principle of antagonism. Is this principle equally applicable to the treatment of constitutional states? Are there any proper antagonists to inflammation, to fever, and to the diatheses and the cachexiæ. I think it can be shown that such antagonists do exist, and that our most successful therapeutical measures are applied in these maladies in accordance with the principle of antagonism.

First, as to the treatment of inflammation. In what does this process consist? Assuming no points that are in doubt, inflammation may be defined to consist in a dilatation (paresis) of the vessel walls, followed by stasis of the blood; in an increase of the number and a modification of the character of the white blood-corpuscles, and their migration from the vessels into the surrounding tissues; in a simultaneous diapedesis of the red corpuscles; in an increase and change of character of the fibrine and albumen of the blood, and their exudation within the area of inflammation; in the diffusion of the salts of the serum, especially the chlorides, into the inflamed parts; in an increased multiplication of the cellular elements of the tissues, in consequence of the increased pabulum furnished them; and in a breaking up, disassociation, and granular degeneration of the anatomical elements of the inflamed tissues. With these changes in the local condition is associated a febrile state, characterized by increased action of the heart, diminished tension in the vessels, and elevated temperature. No single remedy can antagonize the complexus of symptoms belonging to inflammation, but the successive steps in its development may be counteracted by agents having effects opposed to those of the existing phase of the process. The initial change—the preliminary congestion—is often compared to the phenomena which ensue when the cervical sympathetic is divided. Such a comparison is of limited applicability, since in inflammation not only do the vessels dilate, but coincident changes occur in the blood and in the tissues. It follows, therefore, that the remedies which prove effective at the onset of an inflammation must act not only on the contractility of the vessels, but also on the corpuscular elements of the blood, for immediately on the occurrence of stasis the migration of the white corpuscles and the diapedesis of the red begin. There are two remedies of special value at this juncture, and three others of secondary utility. Quinia and morphia, administered together in sufficient quantity at the right moment, will often suppress a beginning inflammation. Such a statement can not be supported by any positive facts, for it is impossible to decide whether the morbid process would have proceeded beyond the point it had attained. The negative facts have a high degree of importance, for, if these remedies fail to accomplish the arrest of the inflammation when applied at the right moment, they are not true antagonists, or the antagonism, if exerted, is without influence over the development of this process. There is need of facts on this point, and the profession should on every suitable opportunity try the truth of this supposed antagonism. My own conviction is that it exists, and that failure is due to the inopportune application of the remedies.

A statement of the physiological actions of these agents will indicate the nature of the opposition. Quinia and morphia, if administered together in quantity sufficient to produce their full physiological effects, will raise the tonus of the arterioles, check the migration of the white corpuscles and the outward diffusion of the albumen, fibrine, and salts, and arrest the amœbiform movements and the subsequent multiplication of the white corpuscles outside the vessels. I have already pointed out that morphia possesses the power to raise the vascular tension and to check all vital processes, and in these actions we have an explanation of its powers in inflammations. Quinia has a greater range of action. Modern researches have cleared up all that was uncertain in regard to its physiological effects, and have explained the therapeutical uses formerly known only through empirical observation. It would occupy all the time at my disposal to discuss the physiological powers of quinia from the historical and critical standpoint; hence I must content myself with the barest statement of the main facts. We owe chiefly to Professor Binz, of Bonn, the demonstration of the activity of quinia as a poison to protoplasm and to the minute forms of life. It is to this property that its power to arrest the movements and other vital acts of the white corpuscle is due. The possession of this property may also serve to explain the curative power of quinia in malarial fevers, if the recent discovery of the bacillus malariæ, by Klebs and Tomassi-Crudeli, is confirmed by further investigations. For, if the malarial diseases be produced by the reception and multiplication of these minute organisms in the blood—as is now known to be the result of the action of Obermeier's parasite in relapsing fever —the agency of quinia in their destruction is readily explained. To act efficiently as a protoplasmic poison, as might be expected, quinia must be given in large doses. Besides this property, quinia, as Binz and others have shown, lessens the oxidizing function of the blood. Ranke, and afterward Kerner and Strassburg,* has shown that it also reduces to a remarkable extent—one half—the excretion of urea and uric acid. As urea represents the oxidation of the nitrogenous tissues, it is obvious that quinia checks this oxidation. It follows from these considerations that quinia antagonizes the increased heat production, the migration and subsequent multiplication of the white cells, and the proliferation of the protoplasm of the tissues, while morphia, by raising the vascular tonus and lowering the work of the heart, tends to remove the congestion.

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* "Arch. f. exp. Pathol. u. Pharmacol.," ii, p. 343.

The other agents, having less important relations to the antagonism of the inflammatory process, are digitalis, aconite, and veratrum viride. While these agree in the power to lower the circulation, they differ in the mode of accomplishing this object. Digitalis slows the heart, but energizes its movements and raises the arterial tension. It also depresses the temperature, but any effect it has over the movements and changes of the protoplasm is secondary to its effect on the tension of the vessels. The amœbiform movements of the white corpuscles are, of course, favored by a relaxed state of the vessel walls, and hindered by a higher tension. The influence of digitalis on temperature is very evident, but it ranks far below quinia as an antipyretic. Hence it is rather as an aid to quinia that digitalis is used than as the chief antipyretic. Among those so prescribing digitalis I may mention Liebermeister. A manifest objection to the administration of digitalis against the initial movements of the inflammatory process is the slowness of its action. After the primary disturbance in the digestive organs, from five to ten hours elapse before the characteristic physiological effects follow. The slow diffusion of the active constituents into the blood is only equaled by their tardy excretion, for in one reported case a patient poisoned by digitalis died on the fifth day from paralysis of the heart. It follows that this agent can not be used effectively against the first stage of inflammation. Aconite behaves differently from digitalis. It reduces the power of the heart, and, although it also lowers arterial tension, the amount of blood reaching the inflamed area is reduced by it. Furthermore, it lessens oxidation by diminishing the work of the lungs, and reduces temperature, partly because less blood is distributed when the heart is working under its influence, and partly because the supply of oxygen reaching the tissues is less. Aconite is especially indicated when the arterial tension in general is high and hæmatosis is active. Veratrum viride possesses powers and properties very similar to those of aconite; but it more distinctly affects the heart, and less, proportionally, the lungs. Its agency in checking inflammation, like that of aconite, consists in lessening the amount of blood going to the inflamed part, and in the diminution of oxidation. The good effects of digitalis, aconite, and veratrum viride cease with the occurrence of exudation, for then new conditions arise which they can in no way oppose or remove.

The antagonists to the second stage of inflammation must, necessarily, have the power to prevent or remove the products of inflammation. The remedies antagonizing these new conditions are quinia, chloral, and the alkalies. The utility of quinia, however, ceases when the exudate has actually formed. Chloral is especially adapted to this stage of the inflammation: it diminishes the fever heat, dissolves exudations, quiets restlessness and delirium. The possession of these properties, except the solvent action on exudations, is nowhere disputed. The experimental evidence of this power to dissolve exudates is conclusive, and the clinical experience, although limited and difficult to define, seems to favor the belief in its existence. It is obvious, however, that the points of contact between chloral in the blood and the exudation in an inflamed area are small. It must, therefore, be more effective when it is administered before the final stasis occurs. The influence of an agent which substitutes quiet for delirium is, in general, favorable to improvement in the local state. The reduction of abnormal heat is not less useful. Chloral, therefore, unquestionably exerts a favorable influence if it does not dissolve an exudation. An important contraindication should not be overlooked—that is, the paralyzing effect of chloral on a weak heart. When exhibited for the proposed treatment the dose should be small, and not administered more frequently than every two hours. The tendency to cardiac depression can be overcome by the joint administration of atropia, which does not lessen the utility of the remedy for the purpose for which it is used.

That the alkalies, especially the potash, ammonia, and lithia salts, by increasing the alkalinity of the blood, check exudations, and cause their solution, more or less effectively, after they have formed, seems a perfectly well-established fact in clinical experience. This mode of treating inflammations was made use of on a large scale by the late J. Hughes Bennett, whose exceptional experience on this point entitles his declarations to special consideration. Alkalies may be advantageously given in alternation with chloral. It must be remembered, of course, that the more alkaline the blood, the more active is chloral. As ammonia is more diffusible than the other alkalies, it has always seemed to me to be more effective. It is best given in the form of the carbonate dissolved in the officinal liquor ammonii acetatis. When the exudation is undergoing solution preparatory to absorption and extrusion, digitalis and quinia again come into use. The particular objects of their use at this time are to give tone to vessels long in a paretic state, and to favor the transformation and elimination of the inflammatory products. Digitalis is probably a more serviceable remedy to secure these purposes than is quinia. Besides, as a result of the more or less long-continued strain on the heart, its action is irritable, quick, and wanting in energy—and these conditions are removed by digitalis.

The treatment of fever, or of that complexus of morbid symptoms known as fever, is a very wide subject. We are now concerned with the antagonists of fever, but, taking this restricted view, there is still much to be considered—so much that I must needs confine myself, during the short time at my disposal, to the barest mention of the chief points. The discussion of the nature of fever has been very fruitful in the past few years, but it has not settled the question, and we are still in the dark as to its essence. The existence of a heat-regulating center is both maintained and denied. Is there in fever increased production or retention of heat? The greater formation and excretion of urea and of carbonic acid indicate that the oxidation processes are accelerated, and therefore there must be increased production of heat; but, as the derangement involves also the radiation of heat from the body, there must in fever be also a less quantity of heat radiated. No single source of heat can therefore be alone concerned in the production of fever, but the truth probably lies to a greater or less extent in all the theories.

The means for reducing fever heat, which we now possess, operate by both modes—on the source of heat production, and by facilitating its dispersion. In the first group are the medicines which stop or hinder those processes on which the formation of heat depends: they are known as *antipyretics*. Besides the antipyretic medicines proper, there are numerous remedies, the paralyzers especially, which diminish heat production among other toxic phenomena.

The first of the agents affecting heat production is repose—the cessation of all activity. I was the first, or among the first, to show that, if rabbits, pigeons, and other small animals are so fettered as to be kept immovable for some time, the temperature of their bodies declines. The period of greatest depression in the temperature of man is in the early morning, after the repose of the night. Medicaments that suspend muscular activity cause a reduction of temperature, which is quite independent of any influence which they may exert on heat production. It is obvious that conclusions drawn from observations in which this cause of lowered temperature is not accounted for must be defective and misleading.

There are numerous agents which affect heat production, the most important being quinia, salicylic acid, resorcin, chloral, digitalis, aconite, and veratrum viride. Besides these, all the remedies which depress the functions of respiration and circulation more or less diminish heat production. Unquestionably, quinia holds the first position as an antipyretic. After an exhaustive examination of the relative merits of these agents, including cold baths and all the methods of hydrotherapy, Liebermeister holds that quinia is entitled to the first place as an antipyretic, and that, if he were restricted to one agent, he would choose quinia. Although this is the testimony of but one clinician, a representative of the German school, his opinion is but an echo of the general sentiment among the more enlightened medical thinkers. The utility of quinia consists in its remarkable power to reduce temperature, conjoined with a minimum of evil effects. I have already, in discussing its applications to the treatment of inflammation, entered somewhat into the nature of its antipyretic action. I need now merely state that the reduction of temperature effected by quinia is the result of its influence over the vital activity of protoplasm and over the so-called ozonizing action of the blood. The diminution in the oxidizing processes is shown in the great reduction of urea formation. The quantity of quinia necessary to effect any considerable reduction of temperature has been pretty closely ascertained: not less than twenty grains can have any distinct antipyretic effect. It is true, in malarial diseases much smaller doses may diminish fever, but here another element enters the problem. Our German *confrères* give twenty, thirty, forty, even sixty grains for the antipyretic effect, and repeat it as may be necessary, to keep the temperature down at the proper level, and withhold it, when the result is attained, until required again. The popular, and to some small extent the professional, opinion, that large doses of quinia affect the ears unfavorably, has no support in my experience. I have used large doses with excellent results in inflammation of the middle ear. That it has any other injurious effect on the human constitution, in proper medicinal doses, seems to me not at all probable. That quinia exercises the same curative influence over fevers—typhoid, for example—that it does over malarial diseases, can not be entertained for one moment. The effect it has on the course of fever is due to its antipyretic property; on malarial diseases, the action is specific and particular. It is effective, then, in the treatment of fever, according to the degree in which it reduces the temperature, and the value of this is determined by the importance of the febrile element in the morbid complexus.

Salicylic acid has many analogies with quinia. Like quinia, it does not affect the normal temperature to any considerable extent, but has a powerful effect on the temperature of fever. The first demonstration of this fact, by Butt,* has been since confirmed by numerous observers. The quantity required to produce a decided antipyretic effect is not less than sixty grains, but eighty, even one hundred and twenty grains, are sometimes necessary. Profuse diaphoresis usually occurs, and then the decline of temperature begins, about a half hour after the proper quantity has been taken. The duration of the decline is about six hours, and this furnishes the measure for its repetition. Although the first reports of the curative power of salicylic acid in malarial diseases, in which it was ranked next to quinia, have not been confirmed, it still maintains its original position as an antipyretic. For the reduction of the temperature in fevers it does not have the position of quinia, but in acute rheumatism its antipyretic action, which appears to be the secret of its curative power in that disease, renders it highly useful.

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* "Centralbl. f. d. med. Wissensch.," lxxxii, 1875.

A new remedy, resorcin, is likely to become useful as an antipyretic and as an antiseptic. Originally obtained from a resin, and because it has some similarity to orcin, its name was compounded of the two. According to its chemical composition, resorcin is meta-dihydroxyl-benzol, and is a phenol. It has no irritant properties, and may be injected subcutaneously without danger of inflammation and abscess. The dose as an antipyretic is about sixty grains. It produces at first quickened action of the heart, flushing of the face, and a sense of warmth and precordial oppression. Then perspiration begins, and is very profuse. With the appearance of perspiration, the temperature declines. The antipyretic effect on febrile temperature is very decided, and hence resorcin may come into general use as an antipyretic, the more especially as it does not produce irritation of the parts to which it is applied.

The effect of digitalis on febrile temperature, although decided, is not equal to that exerted by quinia. It is also much slower in action. The systemic effects of digitalis require several hours for their development, and, unfortunately for its use in the treatment of fevers, it causes, in any considerable quantity, very great gastro-intestinal disturbance. Furthermore, its administration must be regarded as ill advised in cases with weakness of the heart from granular degeneration of its muscular fiber. The quantity required to effect any considerable reduction of temperature is so great as to excite much gastric irritability, besides being hazardous. When employed as an antipyretic, it should be used to aid the action of quinia, rather than alone. Nevertheless, there are symptoms of the febrile state against which digitalis may be used with signal advantage. In the exanthematous fevers, scarlet fever especially, digitalis antagonizes the symptoms most active in bringing about a fatal result, viz., a weak heart, low arterial tension, quick circulation, high temperature, and deficient urinary secretion. Digitalis slows while it strengthens the heart, raises the tension of the arterial system, and stimulates the kidneys to renewed action. If there be difficulty in retaining it by the stomach, the effects of digitalis may be procured by external application of the moistened leaves.

The antipyretic effects of aconite are less certain and decided than those of digitalis, and it differs from the latter in the character of its action. Aconite lessens the activity of the motor apparatus of the heart, and lowers the arterial tension, and hence it opposes the febrile state associated with rapid, strong, and turbulent action of the heart and elevated arterial tension. It is against certain symptoms of the febrile condition that aconite is useful, and not as an antipyretic. Whenever high fever is due to sthenic inflammation, it may lower the fever by acting against its source. The same observations are true of veratrum viride. By slowing the heart and diminishing the amount of blood passing into the inflamed area, by limiting the work done by the lungs, and thus lessening oxidation in general, veratrum viride has an unquestionable influence on the inflammatory process and on the accompanying fever, but it has not much value as an antipyretic purely.

The most efficient remedy against fevers of the essential group is cold, which acts on heat after its production. Nothing could be more exact than the antagonism of cold and heat. By the application of cold to the body, the heat is removed. The influence of cold and heat, respectively, on the circulation is admirably shown in the experiment on the frog's heart, to which I have several times alluded. When the blood is heated above the normal by the fever process the action of the heart increases correspondingly; when the surface blood is cooled, presently the whole amount of blood in the body has its temperature lowered, and the heart soon slows its beat. Thus, whether fever means increased production of heat or retention, the action of cold is equally efficient in reducing it. The result is the same, whether cold is applied by the cold bath, by the cold pack, by the rectal injection of ice water, or by ice bags. That part of the blood in contact with the cold surface loses a portion of its heat, and thus gradually the whole mass of blood has its temperature reduced. With the decline of the body heat cease all those changes due to the elevated temperature. How quickly high heat may kill is seen in heat fever, or sunstroke, and in the hyperpyrexia of some cases of acute rheumatism. How life may be saved under circumstances of imminent danger is witnessed when, in the condition of hyperpyrexia, the abnormal heat is removed by the application of cold. In the two conditions, often confounded under the term sunstroke, of heat fever and heat exhaustion, we have an excellent illustration of the principles of antagonism. In heat fever the abnormal temperature is removed by the cold douche, the cold bath, the cold wet pack, etc., agents which would prove fatal if applied in the case of heat exhaustion, in which the temperature is rather below than above normal, the heart feeble, and the respiration slow and shallow. The remedies suited to heat exhaustion—brandy and tincture of opium—would soon overcome the subject of heat fever. The principle of antagonism, therefore, is the sure guide which we must follow in these dangerous circumstances. Having explained the mechanism of the antagonism, it would serve no useful purpose to enter into details regarding the application of cold. That the treatment of the fevers—of typhoid especially—has been greatly advanced by the method of hydrotherapy, seems hardly to admit of question. The treatment by cold baths is particularly adapted to those fevers in which the temperature is the dominant fact, but hydrotherapy becomes less and less important, the more the morbid complexus is determined by some special poison acting on particular organs. Typhoid represents one group; small-pox the other group of febrile affections.

The third and last division of maladies against which we may direct antagonists is that of the animal poisons, hydrophobia, syphilis, the diatheses, and the cachexias. This is a most difficult subject. Woorara, as I have already mentioned, has in two instances seemed to antagonize the convulsive phenomena of hydrophobia. To this statement may be added the singular case recently treated by pilocarpine, in which the tragic death in a wild delirium may be explained by the accidental moral causes, the spasms having subsided under the action of the remedy. It is not difficult to conceive that the poison may be eliminated by the profuse salivary flow. Very striking are the results obtained by Dr. Guttmann* in the treatment of diphtheria with pilocarpine. Of eighty-one patients with this disease so treated, not one died. He assumes that the free salivary discharge causes softening and detachment of the false membrane, but there must be some other antagonistic influence at work to produce such uniformly good results. It is very desirable to have further experience with the effects of pilocarpine; but it should not be forgotten that this remedy has a depressing effect on the heart, and may therefore coincide with the poison of diphtheria, which also paralyzes the heart.

Probably no fact is better established in therapeutics than the curative effect of mercury in constitutional syphilis. Some resemblance may be admitted to exist in the constitutional effects of both agents. They manifest a tendency to attack the same tissues, and to produce lesions of a parallel, although not of the same, kind. They must therefore exert an antagonism at the points of contact, for no one can pretend, I think, that the poison of syphilis and the poison mercury are the same or similar. They are antagonists, and of such decided antipathy that they can not exist together in the same organ or tissue—one must displace the other. The action of iodide of potassium is different. This is a most diffusible substance, and in a few minutes after being taken has appeared in all parts of the organism. Its chemical affinities are such that mineral matters deposited in the tissues are sought out and eliminated in combination. It is therefore a chemical antidote, rather than a physiological antagonist.

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* "Berlin. klin Woch.," 1880, No. 40.

Reviewing, then, the great subjects of the inflammations, fevers, and specific and diathetic maladies, it is perfectly obvious that the only certain method of management is the use of the antagonist remedies. Although I did not apply the principles to individual examples of inflammation, they are equally applicable to all forms.

Taking finally a comprehensive view of the subject, what are the lessons to be learned? It is obvious, I think, that the only rule which we apply in therapeutics, so far as any rule is applicable, is the rule or principle of antagonism. As respects the treatment of the state induced by poisons, the antagonism is direct. The effects of the two opposing agents counterbalance each other, until the natural powers secure the elimination of the poison. When a toxic substance enters the blood, a series of disturbances follows, due to its presence, to its action on the tissues for which it has a special affinity, and to the efforts made for its elimination. The antagonist pursues a similar course, but affects the particular tissue for which it has an affinity in an opposite manner, and thus prevents the impairment of function, which would otherwise result in death, until elimination occurs. The effort of the organism is always against the retention of organic poisons, and their elimination is always effected if there be sufficient time, and if the organs concerned are in a healthy state.

As respects diseases of particular organs, we find that antagonism is exerted in two modes: by similarity, and by direct antagonism, and that the opposition takes place in respect to the latter mode, at least, in the symptoms. The antagonism by similarity is the action of the remedy on the same tissue, and with similar objective signs, but the effect on the tissue is opposed, for the disturbance produced by the remedy must necessarily be different in kind from that produced by the disease. Two actions of an opposed kind on a diseased tissue must necessarily result in one of two ways: either the disease is arrested, and an equilibrium is restored, or one or the other action predominates. If a proper balance of actions is obtained, and the disease is a functional one, a cure must be the result. This is, in fact, an exemplification of the old doctrine of substitution, and a scientific expression of its truth. In the process by direct antagonism, the symptoms produced by the disease are opposed by the functional disturbance caused by the remedy. If rightly timed, and if the disease be functional in character, the opposition of actions results in an equilibrium, which is health. If the alterations of structure are of a kind to be removed by the operation of physiological processes, then also may restoration be effected by the exertion of an antagonism. In the treatment of inflammation we have an illustration of how the successive steps in the development of the process are in turn subjected to the action of opposing agents. As this process enters largely into the structural alterations produced by disease, we are thus encouraged in our efforts to obtain results by the application of the law of antagonistic action.

It is obvious that treatment must be symptomatic, but not in the ordinary sense. To apply physiological antagonists with accuracy, a careful analysis of symptoms must be made, and we must proceed from the merely objective to the underlying state. Let us take, for example, the symptom fever. How shall we oppose it? Fever is made up of several symptoms: of increased action of the heart, usually low tension of the vessels, of higher temperature, and increased waste. To counterbalance the symptom fever, then, we must employ agents to lower the action of the heart, to raise the tension of the arterial system, to depress the temperature, and to stop waste. One or two or more agents may be required to accomplish this work in its entirety.

The right use of remedies in accordance with the principle or law of antagonism requires an accurate knowledge of physiological therapeutics. To this study, as a distinguished French therapeutist, Béhier, has lately said, the medical profession should give its unremitting attention. Is it the case? Is there that interest in the study of modern therapeutics which we find exhibited in other departments of medical science and art? I fear not. There is still present the notion that observation and experience should be the sole foundations for the construction of a therapeutical science. The old principle, that a remedy which has cured a disease must cure all analogous cases, is still the guiding principle with many of the practitioners of our day. Besides the numberless fallacies, the product of individual experience, the observation of analogies is in every way misleading. The advocates of this empirical method are fond of asserting that the observations on animals can not be applied with any certainty to man; that rabbits eat belladonna leaves with impunity, and that pigeons can hardly be poisoned by opium; but physiological research demonstrates that by another mode of administration these animals are affected in the same way as man. While decrying the results obtained by experimental study, by the physiological method, they are hourly indebted to it for the accurate application of remedial agents. I might offer, for the consideration of those who pursue the empirical method, the declaration of Bernard, who affirms that observations on animals by the physiological method are perfectly conclusive as to the effect of these agents on man, but I prefer to remind them that many of the remedies in constant use are those for which they are indebted to the physiological method of research. Until Magendie studied strychnia, it was merely the mysterious upas poison; until Bernard examined woorara, muscular irritability was the dream of Haller. Chloral continued a mere chemical curiosity, until the genius of Liebreich demonstrated by one effort its wonderful hypnotic qualities. The results achieved in that way have a remarkable permanence. While the notions of the actions and uses of drugs engendered by experience and observation are constantly changing, the deductions of experiment have the same value as the same methods in the other experimental sciences. To this end we should direct our best efforts, and rest satisfied with no less certainty than that which belongs to the exact sciences, until we have attained to such a degree of perfection that, the disease being given, the remedy follows.

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Editorials.

A NEW DEPARTMENT IN THE "JOURNAL."

In the March number of the "Journal" we shall give the first of a series of "Special Articles," as we propose to term them, which, while we do not engage to give one in every number, will form one of the regular departments of the "Journal." Those who are familiar with the French and German journals must know and appreciate what the French call *revues critiques.* So far as they are reviews at all, they are not reviews of books, but rather of subjects.

Even with this extension of their range, they are something more than reviews, for they bear the impress of the authors' personality as no mere review could. The writer selects a subject—preferably one upon which the views of the profession are unsettled, or about which they are not generally informed. The chief facts ascertained in regard to this subject, together with the opinions of those who have written upon it most intelligently, are given in a condensed form. After this (or, indeed, as he goes along), the writer analyzes the facts and criticises the opinions that he has laid before the reader, and, finally, enunciates his own conclusions, founded upon the data gone over in the article, as well as upon his own personal investigations and experience.

In our estimation, this is the very highest style of medical writing. The plan is occasionally carried out to a certain extent in book reviews, particularly when not one book alone, but several, more or less akin in scope, are made the basis of a critical digest. It has sometimes been done, too, in effect, in other articles. We are not aware, however, that papers of this sort have ever constituted a regular feature in medical journals printed in the English language. To make such a series of articles valuable, much will depend upon the choice of subjects, and even more upon the selection of writers. We therefore do not underestimate the difficulties before us, but, having carefully surveyed our resources before entering upon the undertaking, we are confident that we shall be enabled to manage it in such a way as to make the "JOURNAL" more valuable to its readers.

Reviews and Literary Notes

Diseases of the Throat and Nose, including the Pharynx, Larynx, Trachea, Œsophagus, Nasal Cavities, and Neck. By MORELL MACKENZIE, M. D., London, Senior Physician to the Hospital for Diseases of the Throat and Chest, etc. Vol. I. Diseases of the Pharynx, Larynx, and Trachea. Philadelphia: Presley Blakiston, 1880. Pp. 570. Price, $4.00.

Diseases of the Pharynx, Larynx, and Trachea. By MORELL MACKENZIE, M. D., London, Senior Physician to the Hospital for Diseases of the Throat and Chest, etc. New York: William Wood & Co., 1880. Pp. viii–440. [Wood's Library of Standard Medical Authors.]

FOR twenty years the reputation of Morell Mackenzie as practitioner, writer, and teacher in this department of medicine has been unrivaled. In truth, the history of his professional life, covering as it does the period of the inception, growth, and full development of modern laryngoscopy, would represent almost the history of that art; while his brilliant mental endowments, extraordinary clinical opportunities, and systematic methods of observation render him better fitted to produce a work upon diseases of the throat than any specialist of his time. To say that his book exceeds our expectations is but half to express the satisfaction which it gives. Both from a scientific and from a literary standpoint, it is in all essentials as nearly perfect as possible. From beginning to end, its clearness, accuracy, and conciseness are admirable, while the completeness with which every subject is considered causes us to wonder that so much could have been included within the limits maintained. The richness of the bibliography is remarkable, and full credit is given in all cases to authors quoted. Details of cases, excepting when such histories are particularly interesting or instructive, have been omitted.

Vol. I is divided into three parts, which treat respectively of the Pharynx, the Larynx, and the Trachea. Each division is prefaced by a short but excellent anatomical sketch of the organ to which it is devoted. Following this is a description of the best methods of examination, and of instruments useful in diagnosis and treatment. The diseases of the part are then taken up in systematic order. Section I deals with the affections of the pharynx, and includes, besides diseases of the tonsils, diphtheria and the throat affections of the eruptive fevers. Perhaps one of the most useful suggestions given in connection with this department, although not particularly new, is that of the application of the London paste to the enlarged follicles in the hypertrophic form of granular pharyngitis. This measure is strongly recommended, and the method is minutely described. As to the general subject of amygdalitis, we can not agree with the author that "clinically there is no well-marked line of demarkation between the five varieties described by Wagner, and as regards treatment it is sufficient to make two divisions of the disease: (1) superficial or follicular tonsillitis; (2) deep or parenchymatous tonsillitis." Nothing new in the way of treatment is suggested. The chapter upon diphtheria covers sixty pages, and is the best discussion of the subject in the language. The author does not believe in the duality of diphtheria and membranous croup, and fails, therefore, to agree with the deductions of the committee appointed two years ago by the Medico-Chirurgical Society of London to investigate this question. It is through no fault of his that the plan of treatment advocated by him is in some measure unsatisfactory.

Section II, upon the larynx, is of surpassing interest throughout. As an operator upon intra-laryngeal growths, Mackenzie has probably never had an equal, and his chapters upon non-malignant and malignant tumors of the larynx will excite unusual attention. Extirpation of the larynx should be undertaken, he believes, "only at the immediate request of the patient, after the subject has been freely explained to him in all its bearings. It is an operation in which the skill of the surgeon is in some cases shown by the patient not dying under the knife. Owing, however, to the arrangement of the lymphatic system in the larynx, disease of that part does not quickly infect the constitution. This fact favors the prospects of extirpation of the larynx when the neoplasm is confined to its cavity; and in any case the rescue of 15·7 per cent. of patients from certain death must be regarded as one of the greatest triumphs of modern surgery." The chapter on syphilis of the larynx has already been published and reviewed in this country. The author's statement as to the rarity of hereditary syphilis of the larynx in infants has been disproved by some recent observers. In the chapter on perichondritis of the larynx, the question of laryngeal dilatation for stenosis resulting from syphilis or cut throat is considered. This measure fails to meet with the author's entire approval. Tracheotomy in tubercular laryngitis is strongly deprecated, unless the indications for its performance are urgent. The chapters upon the neuroses of the larynx are replete with matter of the greatest interest and value. The volume ends with a consideration of the trachea and its diseases.

The defect of the book, if it may be said to have one, is in the department of therapeutics. Observation at home and abroad has impressed us with the belief that, in resources for the successful treatment of laryngeal disease, our own laryngologists are very decidedly in advance of their European brethren. The reading of this work has served to confirm that view, for, while we are disposed to lay greater stress upon constitutional treatment than is done abroad, our methods of local treatment are unquestionably superior. For example, the use of the troche for purposes of local medication, so universally advocated by Mackenzie, has been almost entirely abandoned by our specialists, the objection being that such chemicals as tannic acid, permanganate of potassium, carbolic acid, and the like, however valuable they may be locally, can only do harm when received into the stomach. On the other hand, the application of medicaments to the upper air-passages in the form of atomized solutions has absolutely superseded the use of the brush and the sponge probang in this country, while abroad it has gained so little ground that it is not even mentioned by Mackenzie.

Among so much that is excellent, it is ungracious to point out faults, which for the most part are trivial, and which we must confess to have discovered only after diligent search; for Dr. Mackenzie's work is classic, and as such it must support most amply his claim to the first position among laryngologists.

Of the two books before us, the one published by Mr. Blakiston is eminently satisfactory. This is abundantly illustrated, and the quality of the cuts, as well as of the letterpress and of its general execution, is excellent. The edition published by the Messrs. Wood & Co. may be a marvel of cheapness; it is certainly a marvel of bad execution, particularly as regards the cuts, and is, therefore, entirely out of harmony with the general spirit of the work. Moreover, of the Philadelphia edition only the first volume is published as yet, and on the title-page it passes for that, and nothing more; whereas we fail to find any hint in the book issued in New York that it does not include the whole work, although manifestly it does not.

A Practical Treatise on Nasal Catarrh. By Beverley Robinson, A. M., M. D. (Paris), Lecturer upon Clinical Medicine at the Bellevue Hospital Medical College, New York, etc. New York: William Wood & Co., 1880. Pp. x–182.

As a conscientious effort to present the most advanced views, Dr. Robinson's monograph will meet with a hearty welcome. His endeavor, as explained in the preface, has not been so much "to make the book learned in bibliographical research as to write a complete, though succinct, account of personal experience and convictions, and thus, if possible, render the work valuable as a practical guide to others." In this he has met with decided success. The general subject is discussed with unusual clearness and accuracy, while the directions as to treatment are excellent. The first chapters are devoted to a consideration of the anatomy, physiology, and pathology of the nasal fossæ, and to descriptions of the instruments best adapted to the examination and treatment of the anterior and posterior nasal cavities. After this, are taken up in succession the subjects of coryza in its various forms, hypertrophy of the turbinated bones, and follicular disease of the naso-pharyngeal space (retro-nasal catarrh).

The chapter on coryza is prefaced by an article upon the hygienic measures necessary to the prophylaxis and cure of catarrhal inflammation of the nasal fossæ, and stress is laid upon the importance of observing the valuable suggestions contained therein. Then follows a detailed account of the different kinds of acute and chronic coryza, their history, pathological anatomy, symptoms, complications, duration, etiology, and treatment.

The chapters on hypertrophy of the turbinated bones and on follicular disease of the naso-pharynx are particularly valuable expositions of these much-abused subjects; and the recommendations as to treatment, both medical and surgical, are very clear and full. Taken altogether, this book embodies the best and most comprehensive discussion of the subject which has yet appeared, while the author's recommendations as to treatment are so judicious, so complete, and so clear that they will be of great value to the general practitioner as well as to the specialist. The typography, paper, binding, etc., are excellent, and the illustrations are carefully selected and well executed.

Hygienic and Sanative Measures for Chronic Catarrhal Inflammation of the Nose, Throat, and Ears. Part I. By Thomas F. Rumbold, M. D. St. Louis: George O. Rumbold & Co., 1880. Pp. 174.

It has seldom been our misfortune to read a book which, on the whole, has seemed to present a greater number of objectionable features than this one. As an attempt, evidently, to popularize science, it can not be considered a success, for its literary shortcomings are so glaring and its scientific doctrines so obviously defective that even with a layman of moderate intelligence it could excite little respect. At a time when so much really good work is being done in this department of medicine, it is inexcusable to bring such a book before the public.

It is not easy to understand the position which the author designed this book to hold in medical literature. It is as far as possible from being a scientific work, and yet more pretentious than if intended solely for the laity. From beginning to end, it is trite, prolix, and commonplace, excepting where an occasional quotation relieves its general monotony. The best chapter in the book is that which treats of the influence of unsound teeth upon catarrhal conditions of the mucous membrane of the naso-pharynx. The author fails, however, to mention his indebtedness to the able article published several years ago by Dr. Samuel Sexton on this subject. Such suggestions as the following, that "those patients that are thin in flesh, and on the surface of whose bodies there is little or no oily material, should not change the stocking-knit suit (underclothing) that is next to the body until it has become soiled, which may be in about one, two, three, or more weeks"; or this: "Ablution should not be performed oftener than the surface of the body requires cleansing, which, in all probability, will not be oftener than once in one or two weeks in warm weather, and once in four to eight weeks in cold weather; or it may not be required at all during cold weather," are hardly in accordance with generally received views. The multiplication of such books at the present time is as unfortunate as it is common, and, in justice to better ones, they should be discouraged.

School and Industrial Hygiene. By D. F. Lincoln, M. D., Chairman, Department of Health, Social Science Association. Philadelphia: Presley Blakiston, 1880. Sm. 8vo, pp. 152. [American Health Primers.] Price, 50c.

This little volume is the twelfth of the series of "American Health Primers," of which it should by right have been among the first; for its precepts begin with childhood soon after its emergence from the cradle—as soon as the child can be intrusted to a "Kindergarten," and carry the pupil through his whole undergraduate career up to and into the vocation of after-life.

The first thing to strike the critical reader is that, despite the small size of the book, its author has sought to make it almost too comprehensive, embracing in his ideal "school" everything relating to education in its widest sense—education of the moral and emotional as well as of the mental and physical qualities. No one, of course, will deny that the model school of the millennium may accomplish such a complete evolution of all the faculties of the coming man; but for some generations yet, as pedagogic nature is constituted, parents will probably send their children to school to be taught the "humanities" in a technical sense, content if this be done without injury to health, and reserving for the home circle such measures for the harmonious development and control of the "moral faculties, affections, emotions, and passions" in various temperaments as their own judgment and knowledge may dictate. The man who admires "spirit" and ambitious enterprise will hardly consent to have his son's character molded to the meek views of some exemplary school-mistress who literally adopts the one-cheek-smitten-turn-the-other principle, and construes Paul's contentment with whatsoever he had to mean a lazy abandonment of all efforts to reach more than mediocrity in worldly things; nor will the mild-mannered, world-despising parent consent to his child's training in opposite methods by a different-minded teacher. Indeed, it may be doubted if this so-called moral culture has not already engaged an undue share of the attention of professional educators of youth; and when we find college faculties laying chief stress upon moral philosophy and controversial points of ethics, in apparent ignorance of the fundamental laws of health as regards drainage, sewerage, and ventilation, we may safely insist that sanitary science is the first and most important thing to be grafted on the ordinary academic course of instruction. The *corpus sanum* is essential, not only to the *mens sana*, but also to the oft-cited "higher nature" of man, and many an aberration of temper or emotion which is attributed by the uninformed teacher to moral deterioration is known by the physician to be really due to foul air or other preventable cause of malnutrition.

In a purely sanitary aspect, however, Dr. Lincoln's doctrines give little occasion for criticism. His first caution is against both the emotional and mental strain too often involved in a school system which over-stimulates emulation by prizes, "exhibitions," and other spurs to study at times which should be given to recreation. In too many instances schools are merely places for the recitation of lessons which have to be learned at home in hours taken from rest or relaxation; too many prototypes justify the following description:

"Over-driven" children will often study late and sleep poorly; they then rise late, dress in haste, and rush for school in dread of a mark for tardiness, often not pausing to sit down at the breakfast table. They thus enter on the day's work with an exhausted and irritable system, which does not have a chance during the forenoon—so taken up is it with school thoughts—to remember its need for repair and rest. The luncheon basket probably contains food suited to attract a jaded system and to produce dyspepsia—cake and pie and doughnuts. The child finishes the school tasks, and goes home with an armful of books and an aching head—in need of food and rest and play, but hardly aware of either, and intent simply on learning the next day's lessons. There is no recovery from this strain, for the lessons are not learned until bedtime, when the experience of the day before is repeated, and so on day after day until the fixed term expires.

Bearing in mind the difficulty with which even a trained and matured mind can apply itself for more than an hour at a time to the acquisition of fresh knowledge in a single direction, the author adopts Dr. Chadwick's rule that, from five to seven years of age each lesson should occupy not more than fifteen minutes; from seven to ten years, about twenty minutes; from ten to twelve years, twenty-five minutes; and from twelve to sixteen or eighteen years, about thirty minutes; and, even with these provisions for variety of mental occupation, he would wisely limit the actual work (including both study and recitation) to five or, under the most favorable circumstances, six hours per diem from seventeen down to twelve years of age; four hours below the age of twelve years; three or three and a half below ten years; and two and a half or three hours below seven years; and he further urges that (with an exception in favor of the Kindergarten plan) no school conducted by set lessons and recitations should receive children under seven or eight years of age. As regards the much-vexed question of sex in education, the author holds that "a healthy girl—such as nine out of ten ought to be—need not suffer in health from regular attendance in school for three, or four, or five hours a day, if she is protected from 'society' and given a fair chance to grow strong." In his opinion, city life and artificial excitements, substituted for outdoor sports and natural youthful interests, do most of the harm which is ascribed to study in girlhood.

The chapter on exercise is a useful one for parents and teachers, though it lacks a warning that the benefits of calisthenics or gymnastics in an average class-room may be more than counterbalanced by defective ventilation. Those on the hygiene of the eye, on the proper arrangement of desks and seats, lighting, ventilation, and heating, site, drainage, etc., contain all that is necessary for a well-appointed school, and it is no detriment to them to say that they contain nothing more than is necessary, nor anything that is new to sanitarians. One caution particularly needed, both in schools and in private houses, is against the common practice of sending impure cellar air through the furnace into the inhabited parts of the house, a caution which builders and masons, as well as janitors, too often neglect.

The few pages devoted to industrial hygiene treat with necessary but rather insufficient brevity of the "dusty trades," of the various toxic influences encountered in many pursuits—though here we miss any mention of the "woolsorters' disease," as it is called in England, or of any other form of anthracæmia; of injuries from atmospheric changes, from overuse of special organs, or from accidents; and conclude with a summary of the sporadic and inharmonious legislation in different places as regards hours of labor for females and children, and a scant review of longevity statistics in various occupations.

Altogether, it may be conscientiously said that Dr. Lincoln has performed his work as thoroughly and usefully as the primer limits of his space would permit; and his book is cordially to be commended to all school-teachers and others who undertake the guidance and training of the young.

How a Person threatened with Bright's Disease ought to Live. By JOSEPH F. EDWARDS, M.D. Philadelphia: Presley Blakiston, 1881. 12mo, pp. 87. Price, 75 cents.

WE opened this little book with a feeling of wonder how a person was to know he was "threatened with Bright's disease." We find the title is well chosen. A very popular idea among the laity is that they are threatened with Bright's disease, and the book is written for the laity. It does not permit of a review from a scientific standpoint.

A Practical Treatise on Surgical Diagnosis. Designed as a Manual for Practitioners and Students. By AMBROSE L. RANNEY, A. M., M. D., Adjunct Professor of Anatomy . . . . in the Medical Department of the University of the City of New York, etc. Second edition, enlarged and revised. New York: William Wood & Co., 1880. Pp. xiii–471.

WE are glad to welcome a second edition of this useful work, and glad to see that the author has been led to vary from the first edition by amplifying the text and modifying in a measure the original tabular form—a change which adds greatly to the attractiveness of the book for the practitioner, if not for the student. Much more might be added in the same direction with advantage, for, as the work now appears, much is of necessity sacrificed to want of space, and useful facts are omitted which would make both pleasant and profitable reading. It is hard to condense the great field of surgical diagnosis into 457 pages of loosely printed matter and do justice to it; and we hope to see the present edition still further amplified in the future. The idea of the book is an exceedingly valuable one, and we think the author might safely venture upon a more pretentious volume.

Abridged Therapeutics; founded upon Histology and Cellular Pathology. With an Appendix. Special Indications for the Application of the Inorganic Tissue-Formers. By W. H. SCHÜSSLER, Dr. Med. et Chir. Authorized translation. By M. DOCETTI WALKER. Edinburgh, New York, 1879. Sm. 8vo, pp. 91. [Sold by Gavin Houston, New York.]

THE author defines his work to be an attempt to "introduce the chemistry of the tissues of the animal organism into the territory of therapeutics." He considers that the inorganic elements of tissues are more important than is generally admitted to be the case. "In the formation of tissue cells the salts absolutely determine the kind of cell"; and a proper equilibrium in any part between organic and inorganic constituents results in a condition of well-being in that part. As a result of these considerations, the author concludes that the inorganic substances which promote the functions of the healthy tissue cells are the proper remedies for a diseased condition of the same cells. The book is itself somewhat of a synopsis, and does not admit of much condensation; it will appear from this outline of its plan that it is eminently enthusiastic in its acceptation of physiologico-chemical theories that are scarcely proven, and leaps somewhat too quickly to apply them therapeutically. A list of diseases, with their appropriate treatments, follows the more general discussion of the subject. This part of the book is even more extraordinary than the first portion; the following are extracts: "For hawking up of white mucus, potassium chloride"; "Potassium phosphate cures that pallidness which has been caused by long-continued depression of the mind," etc. It is apparent, from even these few quotations, that Dr. Schüssler's views will not at once be adopted in this country.

Treatise on Therapeutics. Translated by D. F. Lincoln, M. D., from French of A. Trousseau, Professor of Therapeutics in the Faculty of Medicine of Paris, etc., and H. Pidoux, Member of the Academy of Medicine, etc. Ninth edition, revised and enlarged, with the assistance of Constantin Paul, Professeur agrégé, etc. Vol. III. New York: William Wood & Co., 1880. Pp. iv–379. [Wood's Library of Standard Medical Authors.]

The third and last volume of this famous work contains the chapters on anæsthetics, antispasmodics, neurosthenic tonics, excitants, sedatives and controstimulants, and anthelmintics. As in the other volumes, there are elaborate discussions of the general actions of classes of medicines; these are written in the enthusiastic therapeutist's best style, and are eminently original and forcible. It is very seldom that the somewhat prosy subject of materia medica and therapeutics has been invested with such interest and made so readable. Some fault might be found with the authors' classification of remedies; in the effort to make as few divisions as possible, they have occasionally put somewhat dissimilar drugs under the same head.

Medical Heresies historically considered. A Series of Critical Essays on the Origin and Evolution of Sectarian Medicine, embracing a Special Sketch and Review of Homœopathy, Past and Present. By Gonzalvo C. Smythe, A. M., M. D., Professor of the Practice of Medicine, Central College of Physicians and Surgeons, Indianapolis, etc. Philadelphia: Presley Blakiston, 1880. Pp. viii–17 to 228, inclusive. Price, $1.25.

We take from our shelves a little book published in 1842, written by Oliver Wendell Holmes, and named "Homœopathy, and its Kindred Delusions," and at once compare it with the latest effort in the same direction. The last is larger and more pretentious in scope, dealing with the history of medicine from mythological times down to June, 1880, the date of the last meeting of the American Institute of Homœopathy; and, from the historical facts it contains, is possessed of a certain value. The latter half of the work is devoted entirely to homœopathy, and proves conclusively that Hahnemann believed in small doses, and that some of his nominal followers of the present day do not, but use drugs in large doses. These facts are supported by page upon page of quotations from current homœopathic literature, society transactions, etc., and any one who may wish to enter again into this fruitful and well-worn ground of controversy will here find ample material for reference. The work is rather pleasantly written, in an easy, familiar style, and has cost the writer much literary search.

A Manual of Minor Surgery and Bandaging. By CHRISTOPHER HEATH, F. R. C. S., Surgeon to University College Hospital, etc. Sixth edition, revised and enlarged, with one hundred and fifteen illustrations. Philadelphia: Lindsay & Blakiston, 1880. Pp. xvi-17 to 342, inclusive. Price, $2.

THIS book is already so well known, not only to those students and house-surgeons for whom it was especially intended, but to the general practitioner, that we scarcely need do more than announce the appearance of a sixth edition. It is among the best of its kind, and it has always held a high position since its first appearance, being as complete as so small a work can well be, and being a safe and practical guide to the inexperienced. It contains an immense number of useful hints to those who, not being constantly in the practice of surgery, still have occasionally to attend a surgical case, and are glad of some little work from which to refresh the memory. The present edition is somewhat enlarged, and contains many useful formulæ and diet lists taken from the London hospitals.

The Compend of Anatomy. For Use in the Dissecting Room and in Preparing for Examinations. By JOHN B. ROBERTS, A. M., M. D., Lecturer on Anatomy and on Operative Surgery in the Philadelphia School ot Anatomy, etc. Philadelphia: C. C. Roberts & Co., 1881. Pp. 191.

MEDICAL literature is the richer by one more cram-book on anatomy, and this one is complete in 191 pages of small octavo. We will say, however, that the type is small. The author says the book will be of use to those preparing for examinations. We can only say we are sorry if any examinations on anatomy are of a kind to make the study of such a book useful. We suppose that authors will continue to write such books as this, and that, as long as they are written, publishers may be found; but we believe every hour spent by the student in trying to memorize anatomy from such condensations an utter waste of valuable time in trying to prepare for an examination which should be a test of practical knowledge, and not of pure memory.

BOOKS AND PAMPHLETS RECEIVED.—Differential Diagnosis. A Manual of the Comparative Semeiology of the More Important Diseases. By F. de Havilland Hall, M. D., Assistant Physician to the Westminster Hospital, London. Second American edition. Extensive additions. Edited by Frank Woodbury, M. D., Physician to the German Hospital, Philadelphia. Philadelphia: D. G. Brinton, 1881. Pp. 223. ═══ Lectures on the Surgical Disorders of the Urinary Organs, delivered at the Royal Liverpool Infirmary. By Reginald Harrison, F. R. C. S., Surgeon to the Infirmary, etc. Second edition, considerably enlarged. London: J. & A. Churchill, 1880. Pp. xvi–399. ═══ Osteotomy, with an Inquiry into the Etiology and Pathology of Knock-Knee, Bow-Leg, and other Osseous Deformities of the Lower Limbs. By William Macewen, M. D., Surgeon and Lecturer on Clinical Surgery, Glasgow Royal Infirmary. London: J. & A. Churchill, 1880. Pp. xvi–181. ═══ How to Use the Forceps. With an Introductory

Account of the Female Pelvis and of the Mechanism of Delivery. By Henry G. Landis, A. M., M. D., Professor of Obstetrics and Diseases of Women and Children in Starling Medical College. Illustrated. New York: E. B. Treat, 1880. Sm. 8vo, pp. 168. [Price, $1.50.] ═══ Observations on the Cæsarean Section, Craniotomy, and on other Obstetric Operations. With cases. By Thomas Radford, M. D., F. R. C. P. Edin., F. R. C. S. Eng., etc., Honorary Consulting Physician to St. Mary's Hospital, etc. Second edition. London: J. & A. Churchill, 1880. Pp. xii–225. ═══ Minor Surgical Gynæcology. A Manual of Uterine Diagnosis and the lesser Technicalities of Gynæcological Practice, for the Use of the Advanced Student and General Practitioner. By Paul F. Mundé, M. D., Professor of Gynæcology in Dartmouth Medical College, etc. With three hundred illustrations. New York: William Wood & Co., 1880. Pp. xi–381. [Wood's Library of Standard Medical Authors.] ═══ Compendium of Microscopical Technology. A Guide to Physicians and Students in the Use of the Microscope and in the Preparation of Histological and Pathological Specimens. By Carl Seiler, M. D., late Director of the Microscopical and Biological Section of the Academy of Natural Sciences of Philadelphia, etc. Philadelphia: D. G. Brinton, 1881. Pp. 130. ═══ Photographic Illustrations of Cutaneous Syphilis. By George Henry Fox, A. M., M. D., Clinical Lecturer on Diseases of the Skin, College of Physicians and Surgeons, New York, etc. Parts iv, v, and vi. New York: E. B. Treat. [Price, $2.00 each.] ═══ Yellow Fever: its Ship Origin and Prevention. By Robert B. S. Hargis, M. D., Pensacola, Florida. Philadelphia: D. G. Brinton, M. D. Pp. 76–iv. ═══ Drainage for Health; or, Easy Lessons in Sanitary Science. By Joseph Wilson, M. D., Medical Director, U. S. Navy. Philadelphia: Presley Blakiston, 1881. Pp. 68. [Price, $1.00.] ═══ Rocky Mountain Health Resorts. An Analytical Study of High Altitudes in Relation to the Arrest of Chronic Pulmonary Disease. By Charles Denison, A. M., M. D., etc. Second edition. Boston: Houghton, Mifflin & Co., 1881. Pp. xvi–192. ═══ A Pictorial Manikin, or Movable Atlas of the Human Body, showing the Positions of the Internal Organs by means of Superposed Colored Plates. By Professor G. J. Witkowski, M. D., Member of the Faculté de Médecine de Paris. English Translation of Text by Robert Hunter Semple, M. D., F. R. C. P. London, etc. With Introductory Essay and Explanatory Anatomical Index by Professor D. A. Loomis, M. D., late Assistant Surgeon, U. S. A., etc. New York: Joseph Cristadoro, 1880. [Price, $5.00.] ═══ On the Introduction of Food and Medicine into the Stomach when the Ordinary Channel is Obstructed. By Fred. Humbert, M. D., etc., Upper Alton, Ill. ═══ Phthisis Pulmonalis, and its Treatment with Hypophosphites. By L. de Brémon, M. D., Knight of the Legion of Honor, etc. New York: John Newton, 1880. Pp. 16. ═══ Short-Sight in Relation to Education. An Address delivered to the Birmingham Teachers' Association, November 2, 1880. By Priestley Smith, Ophthalmic Surgeon to the Queen's Hospital, Birmingham. Birmingham and Leicester: The Midland Educational Company, 1880. Pp. 33. ═══ Dr. Paul Börner's Reichsmedicinal-Kalender für Deutschland auf das Jahr 1880. *Idem*, auf das Jahr 1881. Cassel: Theodor Fischer. ═══ Mansill's Almanac of Planetary Meteorology, etc., for 1881. Rock Island, Ill.: R. Crampton. [Price, 25c.] ═══ Transactions of the Medical Society of the State of Pennsylvania, at its Thirtieth Annual Session, 1880. Vol. xiii, part 1. ═══ Transactions of the Twenty-seventh Annual Meeting of the Medical Society of the State of North Carolina, held at Wilmington, N. C., 11th May, 1880. ═══ Proceedings of the

Louisiana State Medical Association, at its Third Meeting, 1880. ===== Sixth Report of the State Board of Health of California, for the year ending June 30, 1880. ===== Report of the Board of Health of the State of Louisiana, for the year 1880. ===== Twenty-fifth Annual Report of the Trustees of the State Lunatic Hospital at Northampton, for the year ending September 30, 1880. ===== Ninety-eighth Annual Catalogue of the Medical School (Boston) of Harvard University, 1880–81. ===== Dr. med. A. Steinbach's Leitfaden für die Geschäfts- und Buchführung des praktischen Arztes, mit Anhang enthaltend: die den praktischen Arzt interessirenden gesetzlichen Bestimmungen, das Verfahren vor dem Amtsgerichte in Schuldklagesachen, Tabelle zur Berechnung der Besuche, Zinsberechnungstabellen, u. s. w. [Reprint.] ===== Abdominal Pulsation, simulating Aneurism of the Abdominal Aorta. By John Williams, M. D., etc. [Reprint.] ===== Scarlatina. A Lecture, etc. By William B. Atkinson, M. D. [Reprint.] ===== The Surgical Treatment of Intestinal Obstruction. By W. T. Briggs, M. D., etc. [Reprint.] ===== Medical Expert Testimony. By F. W. Draper, M. D. [Reprint.] ===== Some of the Errors in the Diagnosis of Eye Diseases into which General Practitioners are most apt to fall. By Samuel Theobald, M. D., etc. [Reprint.] ===== Amblyopia from the Abuse of Tobacco and Alcohol. By David Webster, M. D. [Reprint.] ===== Winter Health Resorts. The Climate of Atlantic City, and its Effects on Pulmonary Diseases. By Boardman Reed, M. D. [Reprint.]

Proceedings of Societies.

NEW YORK OBSTETRICAL SOCIETY.

A stated meeting was held November 16, 1880, Dr. James B. Hunter, President, in the chair.

Retro-uterine Abscess mistaken for a Fibrous Tumor; Death from Septicæmia after the Use of Tents.—Dr. Lusk showed a specimen consisting of the uterus and certain of the adjacent structures that had been massed with it by old inflammatory exudation. The patient was a powerfully built woman, having the appearance of robust health, a domestic servant. Five years before, Dr. Lusk had removed a fibrous polypus from her uterus, splitting the cervix bilaterally for the purpose. A year later, another polypus was removed. Since that time the woman had suffered from hæmorrhage at various times, and had returned for examination, fearing that other polypi had formed. On these various occasions, however, no abnormality was found beyond the presence of a number of small intra-mural fibroids, and no special treatment was resorted to. Recently she again applied, complaining of severe pelvic pain, but not of noteworthy hæmorrhage. A hard mass was felt behind the uterus, and was taken to be a subperitoneal fibrous tumor. The uterus was freely movable from side to side, so that pelvic exudation was not suspected. The os internum was found very rigid on attempting to introduce a tupelo tent, but a moderate-sized sponge tent was passed through it. The next day, on withdrawing the sponge, the upper portion of the cervix was found not to have been sufficiently dilated for the purpose of examination of the cavity of the uterus, and a tupelo tent was introduced. This produced sufficient dilatation, and it was ascertained that the uterus was healthy, except for the imbedded fibroids above mentioned. The next morning, the patient's breathing was found to be rapid, and her temperature was 104·5° F. Under the use of opiates the fever gradually abated, and by the next day it had wholly disappeared. On the third day, at 6 A. M., the woman expressed herself as feeling very comfortable, but at eight o'clock she suddenly had a violent chill, speedily followed by collapse. She died three hours and a half after the chill, and three days after the removal of the tent. At the autopsy, the intestines were found matted to the uterus by old peritoneal exudation, but there were no signs of recent peritonitis. There was a band of cicatricial tissue at the os internum. The swelling behind the uterus, which had been taken for a subperitoneal tumor, proved to be an abscess. It was about as large as a hen's egg, and its walls were gangrenous. The ovaries could not be found, having, perhaps, undergone atrophy from the pressure of the exudation. The liver was enormously enlarged and showed a number of infarction-anæmia spots, but no abscesses. Death had evidently been produced by the sudden development of septicæmia, arising from the gangrenous wall of the abscess. It was not very clear in what precise way the use of the tents had contributed to the result, as the uterus was found perfectly healthy; but the speaker could not divest himself of the idea that it had probably resulted from the conveyance of septic germs to the abscess through the lymphatic interspaces of the softened cervix. ═══ Dr. T. A. EMMET suggested that in this instance the cicatricial tissue at the os internum might have rendered a bad result more likely to happen than would otherwise have been the case. In his experience, dangerous consequences were especially liable to follow the use of tents in nervous and hysterical subjects. He referred to a case that he had reported last winter, in which the trouble did not occur until the seventh day. The patient should never be allowed to get out of bed until the next day after the removal of the tent. In spite of all precautions, he always felt, when about to use a tent, that he was endangering his patient's life. On the other hand, instances of singular freedom from trouble, after gross imprudence in the use of tents, had come to his knowledge.

OCCLUSION OF THE CERVIX UTERI AFTER AMPUTATION; DEATH AFTER DILATATION AND THE USE OF A STEM PESSARY.—Dr. JANVRIN showed the uterus and adjacent parts from the body of a patient whose entire cervix he had removed with the galvanic cautery two years and a half before, for epithelioma. After the operation, the channel into the cavity of the uterus was kept sufficiently open, by the occasional passage of dilators, for the space of six months. The patient then went abroad, and was away a year and a half. On her return, recently, there was perfect occlusion, so that a probe could not be passed, the vagina ending in a cul-de-sac, and she had not menstruated for five months. By Dr. Janvrin's advice, she entered the Woman's Hospital (service of Dr. Bozeman), where on the 20th of October, under anæsthesia, Dr. Janvrin reopened the cervical canal, simply by passing first a probe and then Peaslee's dilators, and inserted a tupelo tent, allowing it to remain about sixteen hours, and then a Greenhalgh's soft-rubber stem pessary. It turned out that she ought to have menstruated just at this time, and the flow came on in thirty-six hours, profusely. To guard against pelvic inflammation, the patient was put under the influence of opium immediately after the operation. Five days afterward, there were signs of incipient pelvic inflammation, and the stem was removed. Opium was given in full doses, and hot-water vaginal injections were used. Quinine also was given, in very large doses. Four days later, a swelling was found encroaching upon the posterior cul-de-sac of the vagina, from which a brownish, ichorous pus flowed on pressure. Four days subsequently, a mass as large as one's fist was felt on the right side, quite above the pelvis and not connected with the abscess that had opened into the vagina. Two days after this, the tissue bordering upon the orifice of the cervical canal was of a sloughy appearance. The following night there was a severe hæmorrhage from this sloughy tissue, which was partially controlled by means of a tampon. On removing the tampon the next day, the uterus was washed out with a solution of carbolic acid, and another tampon was inserted. There was no further loss of blood, but the patient was now very weak, and she died of exhaustion within a few hours. At the autopsy, it was found that the inflammation, having begun around the portion of the cervix left by the amputation, and through which the canal to the uterine cavity had been reëstablished on the 20th of October, had taken on a sloughy character, and had traveled up along the course of the right ureter for the distance of some four inches. The hæmorrhage had taken place from the vessels in this cavity, which had been attacked by the sloughing process. Directly above this cavity, but separated from it by a very thin septum, was an accumulation of pure pus, situated in the cellular tissue surrounding the middle portion of the ureter. This collection of pus—some six ounces—had no communication (as stated before) with the sloughing cavity around the cervix, or with the other collection in Douglas's cul-de-sac, referred to early in the history of the case as having found an outlet through the vaginal wall on the ninth day after the operation. ═══ Dr. Lee referred to the great liability to trouble after the use of tents when menstruation was just impending, especially after it had been absent for some months. He had seen such results after the use of tupelo.

Cystic Degeneration of the Ovary.—Dr. Garrigues showed an ovary that Dr. Bozeman had removed because, in the course of an ovariotomy undertaken on account of a large tumor of the other ovary, it had been found affected with incipient cystic degeneration. When removed, it was but slightly enlarged, but it had been kept in Wickersheimer's solution, which had caused it to swell somewhat. In its gross appearance, it resembled a small brain, showing sulci and gyri. Besides cysts, it contained some small solid tumors. The histological features seemed to support the view that such cysts take their origin from Graafian follicles.

Battey's Operation.—Dr. Dawson showed a patient from whom he had removed both ovaries in April last. [See "The New York Medical Journal" for August, 1880, p. 183.] The woman had had none of her old trouble since the operation, her health was in every way thoroughly restored, and she had gained fifteen pounds in weight. She had two menstrual discharges after the operation, the first of which was profuse, but there had been none for the past five months. Dr. Dawson then read a report of the microscopical examination of the ovaries. The right one, which had been the seat of the severest pain, was found to be undergoing cystic degeneration at three points, one cyst being as large as a hazelnut. The left one showed similar degeneration, but not so marked. This condition of the ovaries might justly be considered a probable cause of the patient's sufferings, and their removal, therefore, the only means of relief. ═══ Dr. LEE remembered the patient's deplorable condition at the time of the operation, and considered the result the most perfect and brilliant he had ever seen from Battey's operation.

THE ENCAPSULATION AND ABSORPTION OF PEDICLE LIGATURES AFTER OVARIOTOMY.—Dr. T. A. EMMET showed a piece of silk that had formed one half of a ligature that he had applied to the pedicle in an ovariotomy done by him in February last, in which the pedicle was dropped. Six months afterward, the portion of ligature was discharged from a sinus that had resulted from the reopening of the incision at a point near that at which a drainage tube had been kept in for a short time. He was disposed to return to the use of the silver-wire ligature, which he had given up because it had been said that silk was likely to become disintegrated and absorbed. Metal, he thought, was more likely to be encapsulated than silk. ═══ Dr. LUSK had been under the impression that only the Chinese silk, and not the ordinary silk, was what, it had been claimed, might be absorbed. ═══ Dr. JANVRIN had made several autopsies after ovariotomy done by the late Dr. Peaslee (who had been referred to as advocating the use of silk on account of the probability of its being absorbed), and in every instance the ligature had been found, merely bridged over with lymph. He was very sure that Dr. Peaslee had never expected the silk to be absorbed, but simply that it would become covered by a fibrinous exudation, and thus remain, a non-irritating substance, through the patient's life. ═══ THE PRESIDENT thought that waxing a silk ligature would prevent its encystment. ═══ Dr. LEE thought that waxing would interfere with its absorption, not with its encapsulation. ═══ Dr. MUNDÉ remarked that it was *raw* silk (not necessarily Chinese) that was supposed, on account of its freedom from lead and other foreign substances to be capable of undergoing absorption.

INTRA-UTERINE PESSARIES.—Dr. WARD mentioned the case of a woman, into whose uterine canal he had inserted a Thomas's glass plug, supported by an anteversion pessary, and who went to spend the summer in the country without following out the precautions advised in regard to the instrument. No harm had happened, and her dysmenorrhœa was decidedly relieved. ═══ Dr. MUNDÉ had observed a like immunity in a case of anteflexion with retroversion, in which he had used a hard-rubber stem, with an Albert Smith vaginal pessary to keep the uterus anteverted. For five months and a half, against his instructions, both instruments were worn continuously, and the patient pursued her ordinary course of life, including indulgence in coitus. Not only did no harm result, but the patient's general health was improved. When removed, the stem was not incrusted.

A STATED meeting was held December 7, 1880, Dr. JAMES B. HUNTER, President, in the chair.

FIBROUS TUMOR OF THE UTERUS.—Dr. T. A. EMMET showed the uterus of a woman, thirty-one years of age, from which he had removed a fibrous tumor weighing over three pounds. The peculiar feature of the case was that the tumor was situated entirely within the cervical tissue. The lower point of attachment could be felt just within the anterior lip, while the mass reached as high as the umbilicus, with a portion filling up the vagina. The undilated part of the uterus, above the internal os, rested on the posterior portion of the mass, in its proper relation to Douglas's cul-de-sac, and appeared like a fibrous nodule. The patient was seen in consultation by Dr. Thomas, and, as the portion of the tumor filling the vagina presented all the appearances of soon sloughing, an immediate operation was considered necessary. The operation consisted in removing the tumor from the vagina with scissors, piece by piece, and for that purpose the mass was drawn down to the vulva. The uterine cavity was not entered until the pedicle was divided, and this had been formed by the traction made on the tumor while it was being removed. The progress was very tedious, and the operation lasted two hours and a half, as the mass was too large above to enter the pelvis, while from its situation in the cervix but little muscular action could be excited by traction to aid in its expulsion. The upper portion of the tumor had been of such rapid growth that it was unlike fibrous structure, and resembled muscular tissue in appearance. It was found impossible to separate this growth from the uterine tissue with the serrated scoop. The hæmorrhage was excessive, and, notwithstanding the frequent use of hypodermic injections of brandy, the patient was much exhausted at the completion of the operation. The portion of uterine wall which had covered the tumor became prolapsed, simulating an inversion of the uterus, but, as it was so soft and thin, it was easily returned, and the cavity was tamponed to arrest the oozing, which had not been checked by the use of hot water or of iodine. The patient remained very feeble, but did fairly until the sixth day, when the temperature began to rise, and she sank from exhaustion. There was no special cause of death found at the autopsy, and no lesions, except that the liver and kidneys were fatty; but the examination showed the true condition of the tumor and its relation to the uterus, which had not been suspected, the growth having been supposed to be an ordinary fibrous tumor, occupying the whole anterior wall of the uterus. ═══ Dr. Garrigues, who had been present at the operation, thought that the profuse hæmorrhage was due to the tumor being attached to the cervix.

Ovarian-Pedicle Ligature extruded through the Urethra.—Dr. Thomas spoke of a case that had lately come under his notice, in which a silk pedicle-ligature, left in the abdomen after ovariotomy, had subsequently ulcerated through into the bladder. Lodging in the urethra, it caused some impediment to urination, and on this account the patient was examined, and the ligature was removed. The silk was entirely unaltered.

Battey's Operation.—Dr. Thomas mentioned a case in which the patient's condition seemed so desperate that removal of the ovaries seemed justifiable, even if surely fatal. Peritonitis seemed to have set in before the patient left the operating-table, and rapidly proved fatal.

Ovariotomy complicated with Enlarged and Adherent Bladder.—Dr. Thomas related a case of ovariotomy in which, upon opening into the peritonæum, a large fleshy mass was found spread out over the front of the tumor and adherent to it. It proved to be the bladder [enlarged and drawn upward, very much as in the case reported by Dr. Noeggerath at a recent meeting (see the January number of the "Journal," p. 105)]. Suspecting that this might be the case, Dr. Thomas attempted to test the question by introducing a catheter, but on account of the pressure of the tumor, the instrument could not be passed beyond the symphysis pubis. So strong, however, was his conviction that the mass was really the bladder, that, finding it impossible otherwise to separate it from the tumor, he deliberately cut into it at a point two or three inches above the symphysis. Having passed a finger through the incision, he was able to recognize the inner surface of the bladder, to inform himself of the limits of the organ, and, using the finger as a guide, to break down the adhesions without further injury to the bladder. It reached to about midway between the umbilicus and the ensiform cartilage. In the course of the operation it was brought wholly outside the abdomen. In closing the abdominal wound, some of the sutures were made to include the wall of the bladder, so that there would be no flow of urine through the vesical incision. The patient was now doing well, and a minute opening at about the middle of the abdominal wound, through which a little urine escaped on the fourteenth day, would doubtless close. At Dr. Thomas's request, Dr. Garrigues had searched the literature of ovariotomy for similar cases, and had found six, all of which had ended fatally.

Vomiting of Pregnancy.—Dr. Thomas gave the history of a patient who, after many years of barrenness, showed symptoms of pregnancy and began to suffer from excessive vomiting. The supposed pregnancy proved to be a phantom tumor. Two weeks after the false labor, nausea and vomiting again set in, and the patient soon became emaciated and very much prostrated. Several physicians saw her, without being able to make a diagnosis, and Dr. Thomas was now called in consultation. Finding no evidence of any disease, he suspected pregnancy, in spite of the recent history of pseudocyesis. He accordingly dilated the cervix with sea-tangle tents, and removed a two-months' ovum. The symptoms were controlled at once.

Malignant Tumor of the Ovary.—Dr. T. A. Emmet mentioned a case of abdominal tumor, in a girl some ten years of age, which, from its size, in comparison with an ordinary ovarian tumor, must have weighed fifty pounds. The whole mass had developed since the end of May last, and it seemed nearly solid, with a moderate collection of fluid in the abdominal cavity. He had been unable to get the child to consent to an examination by the rectum, in consequence of her suffering when a previous attempt had been made, and one by the vagina was of course out of the question. He was therefore unable to form a positive diagnosis, but from the history of the case and from her general appearance, which was so characteristic, he felt satisfied that it was a malignant growth, and probably one from the ovary. The parents had informed him that the previous medical attendant had attempted to aspirate, but had succeeded in obtaining only a few drops of fluid, which, on microscopical examination, had been found characteristic of malignant disease.

Fatty Deposit in the Wall of an Ovarian Cyst.—Dr. Dawson related a case of ovarian cyst in a woman fifty years old, suffering from chronic pneumonia. The cyst was found to be suppurating, and immediate interference was deemed necessary. Two quarts of fluid were withdrawn with an aspirator. Dr. Garrigues examined this fluid, and reported that, while perhaps it might be called pus, it contained but few well-formed corpuscles, but consisted mostly of broken-down ovarian elements. It had the odor of butyric products, and was of acid reaction. The tumor was resonant over full three quarters of its extent, but at the operation no intestine was found in front of it. On opening the peritonæum, a mass of fat was found beneath it, and was taken to be præperitoneal fat. On account of adhesions, it was found impracticable to remove the cyst, and it was therefore clamped in the wound, and the latter was closed. The patient failed to rally well, and death ensued in six hours after the operation.——Dr. Garrigues [who, before Dr. Dawson's arrival, had shown the specimen, consisting of about three quarters of the cyst, removed post mortem] remarked that the great thickness of the cyst wall—more than a finger-breadth over the greater part of the specimen—was due to a deposit of fat in the outer fibrous wall. In this substance there was a sinus-like passage, leading from the inner surface of the cyst wall and ending in a blind extremity, lined with a columnar epithelium. The cyst was either ovarian or parovarian, and in all probability the former, as it was likely that parovarian cysts never suppurated, and he had never found fat in them.=====Dr. Thomas referred to a case of tumor of the broad ligament, apparently parovarian, from which a clear, limpid fluid was removed by aspiration, and the patient did well. Subsequently she returned, emaciated and in a very low state, and the cyst, on being removed, was found filled with fœtid pus. At the autopsy, the tumor was shown to have occupied the broad ligament. In another case, the cyst was opened through the vagina, and was found to be one of the broad ligament. The operation was done on account of symptoms like those in Dr. Dawson's case.=====Dr. Noeggerath remarked that ciliated epithelium should be found in parovarian cysts. In this specimen, the fat was probably developed in the cyst wall, although it looked very much like an inflammatory exudation changed into fat. Old pelvic exudations occasionally became covered with epithelium.=====Dr. Garrigues remarked that the parovarian origin of a cyst was not positively established by the clear, limpid character of its contents, and referred to a case of Dr. Thomas's in which this test proved fallacious; but the nature of the epithelium would always settle the question.

NEW YORK SOCIETY OF GERMAN PHYSICIANS.

A stated meeting was held September 24, 1880, Dr. Scharlau in the chair.

Uterine Fibroids.—Dr. Tauszky exhibited the womb of a negress, containing several small intra-mural fibroids which had undergone calcareous degeneration. He reported that he had had signal success in the treatment of such tumors by the subcutaneous injections of ergotin, as recommended by Hildebrandt.

Membranous Dysmenorrhœa.—Dr. Tauszky also presented a membranous cast of the uterus, expelled during the menstrual flow by a girl aged nineteen, suffering from membranous dysmenorrhœa.

Foreign Body in the Eye.—Dr. Oppenheimer presented a patient from whose left eye he had extracted a splinter of iron with the aid of Dr. Gruening's magnet. The splinter had penetrated the bulb 1 mm. to the right of and below the corneal margin. The ophthalmoscope revealed slight opacity of the vitreous, but no trace of the splinter. Upon the introduction of atropia into the eye, the anterior chamber was found to contain blood, and became completely filled as soon as the patient came under the influence of ether. Under the supposition that the splinter in this case would be found on the side opposite its entrance, an incision was made into the sclera near the rectus internus, and the magnet was introduced through this aperture. The third introduction sufficed to attach the splinter to the instrument and draw it to the opening, whence it was easily removed. After the operation the patient did not experience pain. Three weeks later the blood in the anterior chamber had disappeared, the vitreous and the anterior capsule showed slight filiform opacities, and the patient's vision $= \frac{20}{100}$ in good light.

Uterine Fibroid.—Dr. Scharlau exhibited a fibroid uterine tumor of considerable size, which he had recently removed, and which was first detected by the late Dr. Kammerer sixteen years previous.

POULET'S OBSTETRICAL FORCEPS.—Dr. KUCHER exhibited the instrument, and explained its mode of action.

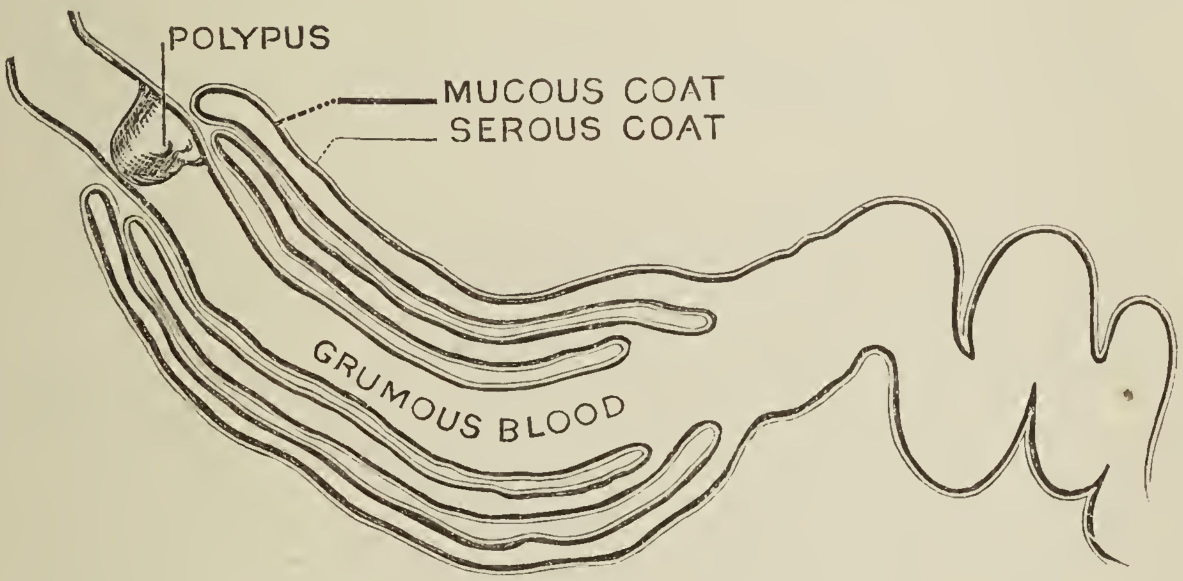
AMAUROSIS DUE TO QUININE POISONING.—Dr. GRUENING gave the history of the case, as follows: The patient was six weeks pregnant, and, five days after an ineffectual attempt at artificial abortion, a fœtid discharge set in, with high temperature. Dr. Adler was called in consultation, and removed the contents of the womb, with but slight hæmorrhage at the time. The temperature rose to 106° F., and was combated by local treatment and quinia internally, to the extent of eighty grains in thirty hours. After a severe hysterical attack, with almost unclouded sensorium, the patient lost her sight and hearing. Twenty-four hours later, she could hear again, but remained totally blind. An examination of the eyes showed the pupils dilated *ad maximum*, without reaction to light; the media clear; the optic disk pale; the capillaries distinct, but reduced in caliber; the retina of a hazy appearance, the macula highly colored and prominent. Three weeks later the patient regained her sight, to lose it again upon the appearance of the menstrual flow. This phenomenon took place once more, followed by decided and steady improvement under the administration of nitrite of amyl, digitalis, iron, and strychnia, and the use of the galvanic current. Dr. Gruening reported that there were five cases on record, in every case recovery having taken place with a contracted field of vision. The prognosis, was, therefore, not unfavorable. In the present case eserine contracted the pupils, but, when its use was discontinued, they became dilated. Light had no influence on the sphincter. Convergent movements produced contraction. The acuity of vision was normal. Dr. Gruening believed that the peculiar symptoms in this case were not due to sepsis, anæmia, or hysteria, but directly to quinine poisoning.

DIPHTHERIA ACCOMPANIED BY A CUTANEOUS ERUPTION.—Dr. JACOBI related the particulars of a case, and remarked that eruptions were very frequent in the epidemics of diphtheria in former years, but had become comparatively rare of late. This eruption might be distinguished from that of scarlatina: 1. Because it was not uniform in appearance. 2. It first appeared on the face and feet. 3. The mucous membrane of the mouth was not affected, as in scarlatina. 4. Occasionally it assumed the form of a perfect urticaria. The hæmorrhagic exanthema in the later stage of diphtheria involved a fatal prognosis. Dr. Jacobi acknowledged that cases with the best-defined symptoms might leave us in doubt as to their true nature.

A stated meeting was held October 22, 1880, Dr. GARRIGUES in the chair.

PERFORATION OF THE VERMIFORM APPENDIX.—Dr. GLUECK presented a specimen and gave the history of the case: A boy, seven years old, who had always been healthy, complained while at school of a severe pain in the abdomen. During the afternoon of the same day he vomited several times. A full dose of citrate of magnesia was administered without producing the desired effect. At 9 o'clock in the evening the boy was carried to his bed, and felt so well that he jumped from his father's arms to the floor. Immediately thereupon he complained of severe pain, and the next day a perforation with perityphlitis was strongly suspected, and this diagnosis was verified by the autopsy. The appendix showed two perforations, and contained hard fæcal matter, in which grape stones, poppy seeds, and caraway seeds were found imbedded. Peritonitis of the right half of the abdomen was also found, with much pus. Dr. Glueck thought it probable that the process of ulceration had existed for some time, without producing symptoms. He also stated that perforation into the abdominal cavities was rare.——Dr. Jacobi remarked that in children between three and eleven years of age the appendix normally showed a reduplication of its mucous coat at the entrance, which acted as a valve in preventing the escape of a foreign body that might have found its way into the opening; and that peritonitic adhesions frequently produced flexions of the appendix. The late Dr. Krackowizer was of the opinion that every perforation of the appendix must have been preceded by localized peritonitis. Dr. Jacobi referred to a case of perforation in which local peritonitis had certainly never existed. He remarked that, in all future cases, as soon as the diagnosis was positively established, he would perform abdominal section and insert a drainage tube. Under antiseptic treatment, adhesions would in all probability close the perforated places and prevent the spread of the inflammatory process.

Double Invagination of the Small Intestine.—Dr. Wendt exhibited this specimen, with the following history: A man, twenty-four years old, suddenly experienced a sharp pain in the abdomen, accompanied by vomiting and great distress. As he found no relief under treatment, he made an attempt at suicide by jumping into the river. He came to shore again, and was subsequently taken to St. Francis's Hospital, where he soon died. The autopsy revealed a double invagination of the small intestine and a mucous polypus, the latter adhering to the opposite ulcerated wall of the intestine, as shown in the accompanying cut.



——Dr. Jacobi thought that the invagination was due to paralysis of the muscular coat of the intestine from ulceration.

Ovarian Tumor.—Dr. Wendt exhibited this specimen, taken from a patient operated upon at the German Hospital by Dr. Bopp. The patient, thirty-eight years old, had given birth to ten children, and did not remember that she had ever been seriously ill. In January last she had a slight attack of peritonitis, after which the tumor was first noticed. On her admission to the hospital the abdomen was enormously distended by an uneven, fluctuating tumor. The tumor was successfully removed in the usual way on the 19th of April. The gelatinous contents could not be removed with the trocar, and a number of adhesions required the ligature. The pedicle was dropped into the pelvic cavity, and the abdomen was closed with silver and catgut sutures. The tumor weighed twenty-eight pounds. The operation was not followed by unpleasant symptoms; the process of healing was satisfactory, and the temperature was almost normal throughout. Microscopically, the tumor was found to be a papilloma proliferum. The trabeculæ of connective tissue were covered with cylindrical epithelium, the interspaces being filled with a colloid substance containing numerous corpuscular elements. This form of ovarian tumor was described by Olshausen. When ciliated epithelium was found, such a tumor might be looked upon as proceeding from the parovarium.=====Dr. Caillé observed that he had found a similar microscopic appearance in the early stage of cystic goître.

The Course and Direction of the Fibers of the Spinal Cord.—These were shown in a model exhibited by Dr. Seesel.

Tracheotomy in Diphtheria.—Dr. Mandelbaum gave the history of three cases of laryngeal diphtheria in which he had performed tracheotomy. The first operation was performed upon a deaf mute. Two weeks after the operation singultus became troublesome, which could be relieved by closing the cannula. In the fourth week the cannula became clogged with granulations; after their removal no further trouble was experienced. The second child operated upon also made a good recovery. The third child died.

Dr. A. G. Gerster, *Secretary.*

Letters to the Editor.

DR. BURNETT ON NOMENCLATURE.

To the Editor of the New York Medical Journal:

Sir: In your editorial, in the January number, on "The National Board of Health on Nomenclature," you mention several names in my list as seemingly unnecessary. In making such a list, you can readily understand, it is a matter of great difficulty to decide what to include and what to leave out. The list, before it was sent to the printer, was submitted to some of the most prominent specialists in New York for suggestions, and those suggestions were carefully considered. There is not a single name you mention as unnecessary which does not convey to an ophthalmologist the idea of a condition which is not implied by any other name in the list. In ophthalmology it is more customary, perhaps, to make nice shades of distinction than in any other department of our science, and we may often appear to be unnecessarily refined in our modes of expression.

"Serpent ulcer of the cornea," "double hearing with both ears," and "Ménière's complex of symptoms" *do* "seem to be unnecessarily awkward expressions"; but, if you can suggest others that will serve their purpose better, not only I but the whole ophthalmological world will be grateful. "Diplacusis binauralis" might be preferred by some to "double hearing with both ears"; but I fancy the latter expression would convey a more definite idea to the general English reader. "Irito-ectomy" (misprinted by you, "irito-ectotomy") is an operation introduced within the last two or three years by Wecker.

I can not be held responsible for the apparent "barbarity" of "pannous keratitis" and "tenonitis," since I found them in our accepted text-books. "Essential phthisis bulbi" should *not* be classed with glaucoma; the printer neglected to put a broad line of separation between them. It was placed next to glaucoma because, being an abnormality of tension, it would naturally be looked for in that vicinity. "Blepharospasm figures twice," because it might be looked for either under the head of "lid affections" or "muscular affections." Thanks for calling attention to the omission of iridodialysis.

In conclusion, I would say that I did not have an opportunity of revising the proof of the list you have seen. Yours truly,

Swan M. Burnett, M. D.

Washington, D. C., *January* 2, 1881.

⁂ Our remarks were not so much intended as a criticism of the lists themselves (which indeed would have seemed to us comparatively unobjectionable in a text-book) as of the official act of urging them upon the attention of a learned body in a foreign country. We felt, and still feel, that lists submitted under such circumstances should contain nothing that might be thought open to the slightest objection. We have to regret the misprint noted by Dr. Burnett; and we will say, furthermore, that the terms "kerato-iritis" and "rheumatic iritis" were inadvertently included among those that we classed as unnecessary.

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Reports on the Progress of Medicine.

QUARTERLY REPORT ON SURGERY.

No. V.

By CHARLES B. KELSEY, M. D.,
SURGEON TO THE EAST SIDE INFIRMARY FOR DISEASES OF THE RECTUM.

1. Jones, T. W.—On the state of the blood in the vessels of an inflamed part. "Am. Jour. of the Med. Sci.," Oct., 1880.
2. Cheever, D. W.—Deep abscess of the neck. "Boston Med. and Surg. Jour.," Oct. 21, 1880.
3. Trélat.—Phlegmon du creux axillaire. "Gaz. des Hôp.," Nov. 23, 1880.
4. Gosselin.—Phlegmon diffus de la cuisse. "Gaz. des Hôp.," Nov. 11, 1880.
5. Verneuil.—De la suppuration orangée. "Arch. Gén. de Méd.," Dec., 1880.
6. Ponfick.—Ueber peritoneale Transfusion beim Menschen. [Vers. dtsch. Naturf. u. Aerzte.] "Dtsch. med. Woch.," Oct. 2, 1880.
7. Parise, J.—Mécanisme de la morte subite dans la gangrène (pénétration des gaz putrides dans le cœur). "Arch. Gén. de Méd.," Nov., 1880.
8. Rivington, W.—Cases of aneurism illustrating difficulty in diagnosis, and the use of Esmarch's bandage. "Lancet," Oct. 30, 1880.
9. Ord, W. M.—A case of aneurism of the aorta treated by galvano-puncture, with some observations on thoracic aneurisms. "St. Thomas's Hosp. Rep.," N. S., x.

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17. Lund, E.—On a case in which one third of the clavicle, the whole of the scapula, and the upper extremity were removed for sarcomatous growth around the shoulder joint. "Brit. Med. Jour.," Oct. 16, 1880.
18. Kraske, P.—Subunguales Sarkom des linken Mittelfingers. "Centrabl. f. Chir.," Sept. 18, 1880.
19. Estlander, J. A.—Étude clinique sur les tumeurs malignes du sein chez la femme. "Rev. Mens. de Méd. et de Chir.," Aug., Oct., 1880.
20. Trélat, U., et al.—Traitement de l'épithélioma de la langue. [Soc. de Chir., Paris.] "Progr. Méd.," Dec. 4, 1880.
21. Verneuil.—Traitement de l'épithélioma de la langue. [Soc. de Chir., Paris.] *Ibid.*, Dec. 11, 1880.
22. Peters, G. A.—Notes of four cases of pharyngeal tumor (myxo-sarcoma), with remarks. "Med. Record," Nov. 20, 1880.
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5. M. Verneuil, having met with a few cases in which a *yellow pus* was secreted in wounds, has given the results of his study into the etiology and pathology of the peculiar condition. The orange color is due to a peculiar change in the coloring matter of the blood caused by the suppurating surface, which seems to have, in this respect, a function analogous to that of the liver and kidneys. The cause of the peculiar appearance and its mode of production are both obscure. There can be little doubt that it stands in a certain relation to pyæmia, being often one of the first signs of that constitutional state; but the relation is not so intimate as has been supposed, and a patient who presents this peculiar symptom may die or get well without at any time showing signs of the pyæmic state. It is always a sign which should cause uneasiness to the surgeon, and it always indicates a constitutional condition which greatly aggravates the prognosis of an injury, and it is to this constitutional state, rather than to the wound itself, that effective treatment must be directed.

7. M. Parise has made a study of several cases of *sudden death in the course of gangrene*, and has come to the following conclusions: 1. That certain gangrenous affections of the limbs or of the trunk may cause sudden death. 2. That this sudden death is due to the formation of putrid gas in the veins of the affected part, which makes its way to the heart. 3. The mechanism by which death is produced is the same as after the artificial introduction of air into the veins in the course of surgical operations, the gas acting mechanically and not as a toxic agent. 4. That this termination is most to be feared in the variety of gangrene which is deep, moist, and of a rapid course. 5. The treatment indicated is immediate amputation unless contraindicated from other causes. 6. In cases where amputation is of necessity deferred, deep incisions should be made and the efferent vessel compressed or ligatured, amputation being performed subsequently. [This class of cases was first described by Maisonneuve, in the "Moniteur des Hôpitaux," 1853, p. 904, but he considered death to be due to blood poisoning from the gas which had found entrance into the circulation. On this point M. Parise differs from him, and chiefly on the ground of the suddenness of the fatal termination.]

33. The object of this exhaustive paper, by Dr. Semon, is to draw attention to *the mechanical impairments of the motor functions of the larynx in consequence of intra- or extra-capsular disease of the crico-arytænoid articulation.* Excluding the cases in which impairment of motion is due to growths, or to other palpable mechanical obstructions, and also those due to nerve lesions or hysterical affections, as well as the primary affections of the muscles, of supposed rheumatic origin, the author believes that many cases will still remain in which the origin of the trouble will be found not in some obscure nerve lesion, but in disease of the crico-arytænoid articulation. This little joint is, from its physiological dignity and in spite of its small size, one of the most important in the whole body, as it presides over both the important functions of respiration and phonation. It is situated in an extremely exposed position, easily accessible to injuries which may befall not only the larynx, but also the œsophagus; at the same time its configuration is a very delicate one; it never rests during waking or sleep, in health or in disease. The parts just in its immediate vicinity are, according to all experience, the favorite seat of almost all the inflammatory and destructive diseases of the larynx; in short, everything tends to show, *a priori*, the likelihood of its taking part in the pathological processes involving its constituent parts. After giving the complete literature of this subject and a table of cases, twenty-one in number, which he has been able to collect from the practice of others and his own, the author classifies the different affections which may involve the joint, and lead to anchylosis, as follows: 1. Local inflammatory causes: perichondritis, simple plastic laryngitis (?), lesions of the joint, wounds, erosions, and ulcerations, luxations, contusions, congenital lesions. 2. Constitutional causes leading to local affections: typhoid fever, variola, syphilis, diphtheria, phthisis, gout, excess of the physiological ossification of old age. 3. Purely mechanical reasons leading to permanent anchylosis: cicatricial contractions of the mucous membrane or of the muscles, after injuries, typhoid, syphilitic, and other ulcerations, etc.; neuropathic or myopathic paralysis; diaphragms, or complete obliterations of the larynx in its lower parts; neoplasms. Each of these causes is dwelt upon at length. The pathological changes in the joint itself are not described, for the reason that only two post-mortem examinations have been made. They are not considered, however, to differ in any essential respects from those found in larger joints in the body. The symptoms are divided into objective and subjective. The joint may be fixed in any position from that of deepest inspiration to that of phonation, and the arytænoid cartilage may even be drawn across the median line. These extreme positions will probably only be found in cases of cicatricial contraction after syphilis and other ulcerative diseases, while in true anchylosis the cord, as shown by the majority of cases on record, will most likely vary in position from the phonatory to what is called the "cadaveric" position, i. e., midway between phonation and deep inspiration. The anchylosis may be bilateral and unsymmetrical. For instance, one arytænoid cartilage may be so fixed that the corresponding cord is in the phonatory position, while the other is fixed in the cadaveric position. Tumefaction is a very important symptom, being present in the majority of cases, and caused by the preceding perichondritis. Immobility with tumefaction favors the belief in a mechanical impairment, while the same condition without tumefaction does not exclude this possibility. The swelling may sometimes be great, and be itself a serious impediment to respiration. In complete anchylosis there may be perfect immobility of the arytænoid cartilage and the corresponding vocal cord; in incomplete anchylosis either the normal smooth movements of these parts may be changed into a jerky and interrupted action, or the mobility will be a limited one if only parts of the joint are affected. In case the anchylosis is combined with luxation, the whole general appearance of the joint is altered. The luxation may exist alone, causing a corresponding change in the appearance of the parts, and it may be possible to replace the luxated cartilage. Such a dislocation may lead to serious stenosis if the points of attachment of the adductor muscles are destroyed. Regarding the subjective symptoms, the following rules hold good: excessive tumefaction, even if only unilateral, is in itself a cause of more or less severe dyspnœa. In bilateral cases extreme dyspnœa will be present, possibly with natural voice, possibly with falsetto voice. Complete aphonia may be present. Hoarseness is by no means necessarily present, though it will generally be found. The diseases with which anchylosis and luxation of the arytænoid cartilages may most easily be confounded are, above all others, nervous and myopathic affections of the larynx. There is no doubt that nervous paralysis is the most frequent cause of motor impairments of the larynx, and always, unless there are such decisive symptoms as tumefaction and luxation, we should think of a nervous paralysis if we observe a motor impairment laryngoscopically. If, however, a careful consideration of the case and a close physical examination of the patient fail to give us a clew to the existence of any such nervous disorder, we shall, especially if there is a history of one of the diseases enumerated above preceding the laryngeal trouble, have to think of the possibility of an anchylosis of the crico-arytænoid articulation. Very unusual position of the immobile cartilage and corresponding cord; *absolute* immobility; signs of previous ulcerative disease; abnormal distortion of the mucous folds; and, above all, tumefaction at the base of the immovable cartilage will of course greatly assist the diagnosis. The possibility of a combination of nervous and mechanical impairment must not be overlooked. The prognosis, as to life, will depend on the nature of the primary disease, on the amount of tumefaction, and on the position in which the anchylosis has taken place. When the patient's life is in danger from stenosis, the stricture may be directly dilated, or tracheotomy may be done. After the danger to life has been removed, the condition may be treated by various local measures.

36. Dr. Schrötter divides the different forms of *contraction of the trachea* into those which are due to pressure from without and those which come from narrowing of the tracheal wall itself. Among the former, the chief is swelling of the thyroid body either in its whole substance or in a small and deeply seated portion. From continuous pressure, a softening of the tracheal rings occurs, so that in time the tube may become merely a soft pouch. Aneurisms are another cause of stenosis, and they may frequently be diagnosticated by tracheal examination in conjunction with auscultation and percussion. In one case, Schrötter injected an aneurism from the trachea. The patient afterward had an attack of pleurisy, and during convalescence the aneurism burst. Tumors and abscesses of the mediastinum are also to be enumerated among the causes of pressure. Generally the caliber of the trachea is reduced to a narrow, median, oval slit by the pressure being exerted from both sides, and only rarely is there a distinct tumor on one side. Foreign bodies occasionally give rise to stenosis. Schrötter met with one case in which the patient came to his clinic suffering from a high degree of stenosis and from pyæmic symptoms. The larynx was free, and the trachea permitted the passage of an elastic catheter. On section a piece of bone was found in the bronchus, and there were two ulcers in the trachea. When a foreign body is removed, and the ulcers heal with a scar, the scar itself may be a cause of contraction. Ulcers from any cause (blennorrhœa, variola, syphilis, or diphtheria) may, by loss of tissue and contraction, act in the same way; and new formations arising in the wall of the trachea itself may have the same effect (papilloma, sarcoma, carcinoma). The treatment consists in the use of the long tracheal catheter, in extirpation of growths, and in operations and dilatation within the tube. A patient was shown whose trachea, at the junction of the upper and middle thirds, was obstructed by a membrane following the ulceration of syphilis. Schrötter proposed to bore through the membrane and thus facilitate the healing process.

39. Dr. Klein divides the *inflammations of the thyroid gland* into idiopathic, traumatic, and metastatic. The first is the rarest, is generally the result of the influences of temperature, and affects by preference young people about the time of puberty. The second follows severe injuries, is generally due to extravasation of blood in the gland tissue, and ends in suppuration. The third is a complication of acute infectious diseases, as typhus, pyæmia, or puerperal fever. It is of a more chronic character than either of the others, and the prognosis is more unfavorable, being generally good in the other varieties. The disease is a rare one, and there is but little literature of the subject. It generally affects only a part of the gland, and is attended by high fever, much pain, extending to the upper extremities, redness, and œdematous swelling. The swelling may extend from the chin to the sternum, and be attended by symptoms of compression of the venous system of the neck (cyanosis of the face, delirium) and with the signs of compression of the trachea and œsophagus (dysphagia and dyspnœa). It may also be complicated by acute laryngitis, pharyngitis, or amygdalitis. From this point, the disease may undergo a gradual subsidence, with disappearance of all symptoms, or may go on to suppuration. In the latter case, doubtful fluctuation will soon be detected, and an incision will be followed by cure. If the pus is left to find its own way to the surface, it may follow almost any path, sometimes opening into the œsophagus, or into the trachea, or working downward into the anterior mediastinum or the pleural cavity. The inflammation may, though it rarely does, end in gangrene.

42. M. Rochard describes at length an *operation for abscess of the liver* which has given perfect results in three cases. After recalling the well-known fatality of the affection under all the ordinary methods of treatment, including aspiration, he describes his operation as follows: The most favorable point for the exploratory puncture with the aspirator is in the eighth or ninth intercostal space, on a line with the anterior border of the axilla. The needle used should be at least three millimetres in diameter, as a smaller one is almost sure to become plugged with the contents of the abscess cavity and the débris of liver tissue. When pus is found, the region having previously been washed with strong carbolic solution, the needle is used as a guide, and a free incision is made into the abscess cavity with a long bistoury, and, while the lips of the incision are held open with forceps, pressure is made on the liver till the pus is removed as far as possible. The cavity is next washed out with carbolic solution, a large drainage tube is introduced, and the wound is covered with the antiseptic dressing. This dressing is changed every day, and at each dressing the tube is removed, thoroughly cleansed, and replaced. In the three cases reported the wound was closed, and the abscess entirely healed, in less than one month.

44. Dr. Adams classifies *diaphragmatic herniæ* into true, false, and congenital. In the former the abdominal contents pass into the chest through one of the natural openings in the diaphragm, and of this class he quotes several interesting cases. In the false variety the opening is the result of a wound of some sort in the diaphragm, through which nearly all of the movable viscera may find their way into the thorax, and life still be preserved for many years with more or less comfort. The case which the author reports from his own practice comes under this class, though it is unique, the hernial protrusion being connected with the spleen, and apparently a new growth, the nature of which could not be exactly ascertained. In the last variety the opening is due to a congenital deficiency or weakness in the muscle, the sufferer generally dying in childhood or early youth. The author has made a careful study of the literature of the subject, and has concluded that a patient suffering from any form of this accident may live in comparative good health till death is caused by some other affection. Nearly all the well-authenticated cases are referred to in foot-notes.

48. Dr. Aly reports *eleven operations for the radical cure of hernia* after Czerny's method. One of the operations was upon a woman seventy-three years of age, who had suffered for eight days from an incarcerated inguinal hernia, and in whom the gut was already gangrenous. A piece ten centimetres long was removed, and the woman died on the following day of acute peritonitis due to leakage from the bowel into the peritoneal cavity. In another case, that of a laborer fifty-six years old, the hernia had been incarcerated four days, and the patient was moribund when admitted to the hospital, and died during the operation. In the nine remaining cases the operation was performed five times upon incarcerated and four times upon free herniæ. Of the incarcerated, four were inguinal, three of them in men between thirty and fifty-two years old, and one in a woman of seventy-three. The other was crural, in a woman of forty-five. In these operations it is particularly noticeable that, in spite of the peritonæum being opened, there was only the slightest trace of peritonitis to be observed, that in none of the cases did the temperature rise above 39° C. [102° F.], and that without exception the wound healed by first intention. This result is attributed solely to the rigorous adherence to Lister's methods. Generally the dressings were renewed three times, the first being allowed to remain only one day, and the second about eight days. The wound was carefully covered with the dressing, only a small hole being left for the passage of the penis. The operator has somewhat modified Czerny's original method, which consists essentially in separating the spermatic cord from the hernial sac, separating also the contents of the sac from the sac itself, and strangulating the neck of the sac with a catgut ligature; but the modifications are confined to minor points, and do not change the main idea of the operation. The healing is complete in from twenty-seven to thirty-seven days, and the result is permanent, as was shown in the cases of several patients seen at long intervals after the operation.

49. M. Bourguet, after a well-written review of most of the published cases of *strangulation in irreducible herniæ with old adhesions*, and after the publication of two cases which have come under his own observation, arrives at the following conclusions: Herniæ complicated with old adhesions which render them irreducible, without being as liable to strangulation as those which are reducible, are not entirely exempt from that accident. Strangulation, when produced, is slower in its progress, and is generally associated with inflammation of the peritoneal sac. The diagnosis presents many difficulties, and for its establishment requires a very careful analysis of the distinctive characters of the two complications. Surgical interference is indicated whenever the signs of strangulation predominate over those of inflammation. The symptoms which may guide the surgeon are fæcal vomiting, absolute and persistent constipation, tympanites, and the absence of emissions of gas per anum. Forcible and prolonged taxis is absolutely contraindicated in such cases. A gentle taxis may be attempted, but should only be practiced with extreme gentleness, and without persistence. The operation of kelotomy constitutes, on the contrary, the only resource; it should be practiced without delay, however grave may be the patient's appearance. The proceeding which has given the best results consists in removal of the constriction and leaving the intestine outside, or in division of the constriction followed by reduction and immobilization of the intestine.

50. Dr. Englisch has collected forty cases in which there were *symptoms of strangulated hernia due to inflammation of the free hernial sac*, and in thirty of which herniotomy was performed. The symptoms of strangulation (great pain, swelling, and tension) generally appear after some local injury. The pain in the hernia itself is, however, generally less intense than in true strangulation. The vomiting and passages give no assistance in the differential diagnosis, nor do the appearance of the swelling itself, the degree of tension, the fluctuation, etc., for the reason that the subcutaneous cellular tissue is generally involved in the inflammation. A valuable point in the diagnosis is, that in inflammation of the free hernial sac the size of the swelling may be reduced by pressure and emptying of the contents of the tumor into the cavity of the abdomen through the natural communication which exists. Englisch has not been able to observe this symptom in his own cases, probably from the closure of the abdominal opening by the inflammatory process. The treatment consists in puncturing the tumor with an aspirator and removing a part of the fluid, and after that chiefly in rest. The greater number of cases have been those of crural hernia in women.

53. Dr. Staton reports another *successful case of gastrostomy* for stricture of the œsophagus, in a boy eight years of age. The incision was made diagonally from right to left under the cartilage of the eighth rib on the left side, as near to the sternum as possible. Not only is the successful performance of this operation worthy to be noted, but there are several minor points of interest. The stomach was so firmly contracted that it measured, when drawn through the wound and out of the abdomen, only two and a half inches in length, by one and a half in breadth; and this firmly contracted state gave rise to much subsequent trouble in feeding, the viscus refusing to dilate when food was injected into it. In feeding, the boy masticates his food as usual, then ejects it into a rubber tube long enough to pass from his mouth to the cannula in the gastric fistula, through which it passes into the stomach. At the time of publishing, the patient was gaining in weight.

55. Dr. Briggs adds three more to the number of cases in which American surgeons have performed the operation of *laparotomy for intestinal obstruction*. In the first he opened the abdomen and relieved an intussusception; in the second he made an artificial anus in the right loin, opening into the small intestine just above the ileo-cæcal valve, to relieve an obstruction, tubercular in character; and in the third he evacuated an ovarian cyst, and established permanent drainage, the bowel being occluded by the pressure of the cyst. All three cases did well. In the second case the author calls attention to the constant flow of fluid intestinal contents from the wound, which persisted, we infer, till the time of the patient's death, five months after. It is a great pity that such a case should not have been studied and reported upon more fully from a physiological standpoint. On these three cases the author bases an argument for the more general and early performance of the operation in all cases of internal intestinal obstruction. The argument is good and is clearly stated, covering the ground which has frequently been ably covered by American and British surgeons during the past few years. The disease is very apt to be fatal if left to its course, and the operation adds little to the danger to life. [This is the ground taken by those in favor of the operation. The other side of the question is that the disease, in a certain proportion of cases, gets well spontaneously, and that in the remainder the diagnosis is generally made too late for the operation to offer much hope of success, besides being in itself a capital surgical procedure. The propriety of surgical interference, and especially of early interference, is, however, amply supported by the results of a daily increasing number of favorable cases; and here, as everywhere, the treatment is easy after the diagnosis is made. In the three cases reported by the author, no argument is necessary to prove that laparotomy was indicated, and when he says, "We would unhesitatingly urge laparotomy early in the course of acute intestinal obstructions, whether dependent upon internal hernia, inflammatory bands, volvulus, knots, diverticula, intussusception, etc., at least as soon as the existence and nature of the obstruction can be ascertained," he states the general rule by which surgeons are at present guided. But when he says, "If the exact nature of the trouble can not be satisfactorily determined, the symptoms being urgent and characteristic, we would insist upon an exploratory incision, and search for the cause of the difficulty," he takes a position which, though it may be the proper one, is not yet so considered by all. There are cases on record where opening the abdomen for the sake of diagnosis has caused death, as well as others in which it has saved life. We find it stated once more that "the operation of colotomy was first suggested by Callisen in 1796," and we wonder how long that little romance of surgery is destined to survive. There is some uncertainty in the early history of these operations, and some ambiguity of terms, which is apt to mislead. The idea of an artificial anus was first proposed by Littré, in 1710, and the operation he suggested was that of opening the sigmoid flexure in the left loin. His operation did not involve the idea of avoiding the peritonæum, as he expressly recommends that the bowel be secured to the wound by passing a ligature *through the mesentery.* He never, so far as is known, performed the operation which at present passes by his name—that of opening the bowel in the inguinal region. The first operation actually performed was in 1770, by Pillore, of Rouen, and consisted in opening into the cæcum for a complete obstruction due to cancer of the rectum. The patient lived twenty-eight days, and death was not due to the operation. In 1783 Dubois operated in the same way for imperforate anus, but the operation gave no relief, and the child died on the tenth day. In 1793 Duret, of Brest, opened the sigmoid flexure of a child two days old, and the child lived to adult age. In 1794 Desault did the same operation, without success. In 1797 Fine, of Geneva, made an artificial anus in the arch of the colon for a cancer of the rectum, and the patient lived three months and a half. After that the operation was practiced by several surgeons; by Martland in 1814, by Freer, of Birmingham, in 1817, and by Pring in 1820. In many of these cases the original suggestion of Littré was modified to suit the operator, but in all of them the attempt was to form an anus through some point in the abdomen and without regard to the peritonæum. Callisen's work, "Systema Chirurgiæ Hodiernæ," appeared in 1813; and in it he says, "The incision of the cæcum and descending colon *which has been proposed* in this state of things (imperforate rectum), by means of an incision in the left lumbar region at the border of the quadratus lumborum, to establish an artificial anus, presents a very uncertain chance, and the life of the little patient can scarcely be saved; nevertheless, the intestine may be reached more easily in this place than above, in the inguinal region." What, then, does colotomy owe to Callisen? A general condemnation of all that had been done up to his time, and a mistaken opinion as to the relative ease of the lumbar and abdominal operations. There are two names which will always be famous in this operation, that of Littré, who first proposed to do it at all, and that of Amussat, who first proposed to do it without wounding the peritonæum. The cases reported by Dr. Briggs were all of a kind in which surgical interference was manifestly indicated, being evidently due to mechanical obstruction of some sort. The real question which the surgeon has to face is, not whether an operation is indicated when the diagnosis is plain, but whether to make an abdominal wound when the diagnosis is obscure.]

59. Dr. Macleod suggests the following modification of the ordinary procedures for *imperforate rectum.* The idea has occurred to him from the study of a case in which he operated in the usual way through the abdominal wall, and on post-mortem examination found the upper cul-de-sac largely distended with meconium, situated at the pelvic brim, and freely movable. He suggests an opening in the median line of the abdomen, after the ano-perineal operation has been attempted and has failed. The forefinger of the left hand is then to be passed through the abdominal wound down into the pelvis, as near to the perineal wound as possible, and used as a director while the perineal incision is deepened till the finger protrudes. With the left finger in the abdominal wound, and the corresponding finger of the right hand in the perineal wound, the upper cul-de-sac is to be isolated and brought down to the anus, and fastened. The advantages of such an operation are manifest, provided it were not done at too great a risk. Its real value can be estimated only after trial, and the evident dangers will deter most operators from trying it.

68. Under the name of *pilo-nidal sinus* (pilus, a hair; nidus, a nest), Dr. Hodges describes an affection which, though it may have been noticed by practitioners, has never before been described. It is simply a ball of hair and dirt in a sinus between the anus and the tip of the coccyx. The sinus is a deep, symmetrical, somewhat conical dimple of congenital origin, representing an imperfect union of the lateral halves of the body, involving the integument only, in which, as life advances, short hairs and other particles accumulate. These, by their irritation, cause a purulent discharge from the fistulous opening of the cavity, and when the case comes under the observation of the surgeon it is usually mistaken for a fistula in ano. The hair being removed, the sinus closes by granulation. This sinus is never found in children, never in men who do not have a large amount of hairy growth about the nates, and so rarely in women that the records of the Massachusetts General Hospital include but a single instance, and in this patient there was, for a female, an unusual growth of hair. For the development of the affection there are necessary a congenital coccygeal dimple, an abundant pilous growth (hence adult age and almost of necessity the male sex), and insufficient attention to cleanliness. Hence the affection is met with in persons of the lower class, and in hospital rather than private practice.

69. Mr. Mac Cormac reports a very *successful operation, after Thiersch's method, for extrophy of the bladder.* The operation consists in transplanting granulating surfaces over the unclosed portion of the abdominal wall. A flap is partially raised from the front of the abdominal wall, the attachments being left at both ends, and only the middle portion kept separated from its natural bed by the interposition of strips of oiled lint. After sufficient time has elapsed for granulations to spring up on the lower surface of this flap, which includes not only the skin but the superficial fascia, it is cut loose at its upper end and turned down over the uncovered surface of the bladder. The flap is made large enough to more than cover the surface, to allow for the great shrinkage which is apt to occur. When this has firmly united to the bed prepared for it, another similar one is taken from the opposite side to cover what remains uncovered after the shrinkage of the first, all the surfaces and edges being carefully prepared for union. After the healing is complete, a cavity is gradually formed for the accommodation of the urine. The various operations require about one year. This procedure is greatly preferable to any which involve the idea of turning the skin surface of the flap down over the bladder, there being no sure method of preventing the continued growth of the hair, while each hair becomes the center of a phosphatic deposit.

84. M. Mollière, after giving three cases of *fracture of the astragalus*, comes to the following conclusions with regard to this obscure and often overlooked accident. The cases in which it occurs are generally those where a severe injury renders amputation necessary, and where, on this account, the particular injury to the astragalus is not studied. It may happen, however, and often does, that in obscure injuries about the ankle joint the astragalus has been fractured at its neck. The anterior fragment alone may suffer displacement. One of the symptoms of the fracture is a contraction of the inner surface of the foot, and on this account the prognosis should be reserved, as the injury may result in a talipes equinovarus. Should this happen, it must be met by division of the tendo Achillis, by massage, and by suitable apparatus. Fracture without external wound may cause a suppuration of the joint, from the complete separation and necrosis of a small fragment.

94. The *annotations on anæsthetics* given by Mr. Osborn, chloroformist to St. Thomas's Hospital, should be read and remembered by every practitioner. There are three anæsthetics in common use in the hospital: nitrous oxide, ether, and chloroform. The former is used only in operations which may be finished in a few seconds, its prolonged use being considered dangerous. Chloroform is used in children under five years of age and in old people over sixty. In the latter it is preferred to ether because it does not produce the same amount of hyperæmia of the air passages, a result which may terminate in death. Though chloroform is commonly used in children, almost any anæsthetic is well borne. With these exceptions, ether is used in all possible cases. If chloroform is to be administered, it may be preceded by a glass of brandy and water, but no alcohol of any description should be given before the administration of ether. Vomiting is more frequent after chloroform than after ether, the excessive sweetness of the former being the cause. The alternating contraction of the abdominal muscles is the principal sign of impending vomiting, and, if the anæsthesia be slightly increased, this may be subdued. Chloroform is administered on a piece of lint folded into the shape of a cone to allow of free entrance of air. Ether is given in Clover's apparatus, and four ounces are found amply sufficient for the longest operation. Valvular disease of the heart is not considered to contraindicate the use of ether, the heart which is most to be feared being the fatty one, which can not be diagnosticated by any auscultatory signs. Feebleness of the pulse, also, should not deter one from the administration of ether, for, although a very small amount of ether will be required to produce insensibility, the pulse will generally improve under its influence, and should it not do so the patient may generally with care be carried through the operation. In giving anæsthetics for cases operated on with the aid of Esmarch's bandage, it will never be found necessary to produce very intense anæsthesia, for the constriction of the tourniquet so deadens the limb that sensibility is blunted. Also, in patients suffering from shock the amount of the anæsthetic required is less than in ordinary cases, on account of the nervous sensibility being already partially paralyzed. Shock may kill a patient while under the anæsthetic, death resulting, not from the effects of the anæsthetic, but solely from the shock. A lowering of the pulse has been seen to follow some of the more serious operations, and from a lowering of the pulse, on the one hand, to a fatal syncope, on the other, is only a question of degree. Death may result from cerebral hæmorrhage, the blood-vessels giving way under the increased pressure. Death may also occur from failure of the heart's action, or from asphyxia, the former being the more serious accident of the two, as the heart can not be roused to renewed action, though, in the latter, artificial respiration may save life. When, under chloroform, there are signs of failure of the heart's action, ether may be substituted as a cardiac stimulant. In cases of threatened asphyxia, never trust solely to thrusting the lower jaw forward, but forcibly draw the tongue out of the mouth with forceps. Œdema, or spasm of the glottis, or obstruction in the trachea, must be met by immediate tracheotomy, and patients have frequently been saved thereby. It is not probable that traction made upon the tongue has any effect in raising the epiglottis; therefore, if traction upon the tongue does not immediately relieve the threatened asphyxia, by allowing air to enter the lungs freely, tracheotomy must be done without delay. Finally, the conclusion of the writer is that neither ether nor any other anæsthetic is absolutely safe, and that they should always be given by one who is in the constant habit of administering them, and who will give his sole attention to the work of managing them.

QUARTERLY REPORT ON DERMATOLOGY.

No. IV.

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4. Wright, in a lengthy clinical lecture, abounding in anecdote and glittering generalities, offers some views as to the cause and treatment of *pruritus ani* which are worthy of attention. In addition to a restriction of the diet, he advises total abstinence from tobacco, and states his belief that many of the worst cases of this affection depend upon excessive smoking or over-indulgence in wine. He speaks of patients who, when mentally disturbed by business difficulties, solace themselves by excessive recourse to the weed, and suffer consequently from an aggravated pruritus. Possibly the worry and mental anxiety alone would produce the trouble in these cases, but he adds that he knows many patients who are free from the disorder so long as they let tobacco alone, and who are tormented by it whenever they indulge to excess. The free use of coffee is also forbidden. Exercise, frequent bathing of the anal region, and laxatives are to be prescribed in all cases occurring in plethoric subjects. In nervous patients bromide of potassium and chloral are recommended in full doses at night, but a caution is given against the use of opium, which is apt to increase the trouble on the following day, and to lead to the habit of indulgence in this drug. Locally, the following lotion is recommended: ℞ Sodii biborat. ʒ ij, morphiæ muriat. gr. xvj, acid. hydrocyanic. dilut. f ℥ ss., glycerin. f ℥ ij, aquæ ad f ℥ viij. M.; or the following ointment: ℞ Chloroform. f ʒ ij, glycerin. f ℥ ss., cerati ℥ jss. M. When there is eczema of this region, the writer says that the disease must be managed in accordance with those principles which guide us in the treatment of eczema elsewhere, i. e., by free doses of arsenic internally. [Such guiding principles certainly do not lead to a cure of eczema in thousands of cases in which they are employed as a basis of treatment, and, in connection with the writer's statement that he has cured many cases with Fowler's solution alone, we must remember that severe pruritus ani often lasts but a short time and disappears without treatment or irrespective of treatment, the cause of the disorder having been a temporary one.] The writer speaks of pityriasis versicolor (chromophytosis) as a possible cause of pruritus ani. As this parasitic affection occurs chiefly on parts which sweat a great deal, he believes that it frequently makes its appearance about the anus. [Now, if the spores have been detected in epidermis scraped from this locality, as one might infer from the writer's language, it is an important contribution to dermatology, but the mere fact that this part is moist from perspiration is no argument that the disease should flourish there any more than on the feet and hands, where it certainly is never seen.]

5. Finny, in speaking of *eczema of the fingers*, states that, although eczema attacks by preference the flexor surface of the limbs and larger joints, it makes an exception to this rule in case of the fingers, upon the backs of which it is commonly situated. He goes on to say that it is only on the thumb and little finger that it appears "all round the front and back." [In this country, eczema in an acute form is very apt to occur on the sides of the fingers, and many cases are met with in which the disease is limited to the palmar aspect of the finger ends. He speaks, furthermore, of the symmetry which obtains, as a rule, in every form of eczema which is not due to local irritation. Surely the disease under such circumstances is frequently unsymmetrical, and the tendency to symmetrical development, though marked in many cases, is by no means such a constant feature of eczema as it is of psoriasis. Pruritus seems to be the most prominent symptom of eczema in Ireland, as in America, but, when the writer tells us that it is so severe at times, when the disease is situated on the scrotum or on the eyebrows, that he has known the scratching to be carried to such an extent as to remove every hair from the affected part, we are surprised at its severity.] In eczema of the ends of the fingers, close to the nails, occurring in nurses and others whose hands are frequently immersed in water, the writer recommends the frequent coating of the fissures and ends of the fingers generally with a solution of gutta percha in chloroform. [We have employed this plan of treatment, but have discarded it as being a palliative rather than a curative measure. It is better, we think, to lessen the pain and inflammation by prolonged immersion of the fingers in hot water, followed by the application of a stiff diachylon ointment, each finger being bandaged separately for the night.] Of the predisposing causes of eczema, the writer mentions, in addition to gout and scrofula, nervous exhaustion, such as is common in governesses and mothers of large families and other overworked persons with much anxiety of mind. In these cases the use of pure phosphorus has been followed by remarkably gratifying results. The treatment of eczema digitorum consists of: 1. Internal medication; 2. Regulation of diet; 3. Restricted bathing of the parts; 4. Local treatment. [We agree with the writer in his objection to Hebra's view as to the uselessness of internal medication, but we can not accept his belief in the existence of a *materies morbi*, which requires removal from the system. Indeed the practice of the writer is evidently intended to improve the patient's general condition rather

than to eliminate any poison from the system.] Local treatment he believes to be the most important in eczema of the fingers. In the acute stage each finger is to be wrapped with strips of linen smeared with ammoniated-mercury ointment or equal parts of vaseline and oleate of zinc. To allay the burning or itching sensation, ten minims of chloroform or dilute hydrocyanic acid is added to each ounce of ointment. The dressing should remain undisturbed for about twenty-four hours, when it is to be changed, the parts being cleansed with oatmeal tea rather than by the use of soap. When induration exists, rubber finger-stalls are advised. Under their use the skin becomes pliable, soft, and thin, the cracks heal, and the scales disappear. An oleate-of-zinc ointment will now complete the cure.

6, 7, 8, 9. Thin claims that the *bad odor of sweating feet* is due to the development of an organism, which he calls *bacterium fœtidum* in the alkaline fluid (mingled sweat and serum). Profuse sweating of the palms and soles is not uncommon, but this condition is not necessarily offensive to the sense of smell. Thin agrees with Hebra that, in those cases which yield the characteristic sickening odor, the latter proceeds not from the sweat itself, but from the coverings of the feet. He found that subjecting the soles of a patient's stockings and boots to the action of an antiseptic solution completely banished the odor. He therefore advocates the following plan of treatment: Change the stockings twice daily and immerse their feet, at least, in a jar containing a saturated solution of boracic acid. They may then be dried and worn again if desired. To prevent the soles of the boots from harboring the vile odor, half a dozen cork soles are necessary. A pair may be worn for a day, immersed in the solution at night, and allowed to dry during the following day. The solution may be used as a wash for the tender skin of the soles, to which it imparts a sensation of coolness when they are hot, swollen, or eczematous. By destroying the bacteria, the annoying trouble is cured. ═══ Willcox directs attention to a method of cure of sweating feet, which he thinks is more simple than that advocated by Thin, and as efficacious. He straps the sole as smoothly as possible with ordinary adhesive plaster. This is to be renewed in three or four days, and at the expiration of a week the skin will be found to be quite healthy. The odor ceases after the first application, and the patient walks with comfort. The writer does not explain the action of his remedy, but predicts with confidence a speedy cure in the most severe case. ═══ The fœtid odor of hyperidrotic feet can be removed, according to Ainsworth, by the local use of salicylic acid, combined with any inert absorbent powder. To lessen the moisture as well as the odor, he recommends the following remedy: ℞ Pulv. alum. exsiccati ℥ iij, acid. salicylici ʒ ss.–iij, and gives careful directions regarding its use. The feet are to be bathed every morning with soap and water, and gently dried with a towel. Before they are entirely dry, the powder is to be freely applied to the whole foot, and especially between and beneath the toes. It is also to be sprinkled in the stockings and also the shoes. At first, the application should be made two or three times daily, but after a few days of treatment the morning application will suffice. Clean stockings are required every morning, and low shoes. The application soon causes epidermic exfoliation, beginning between the toes and finally affecting the sole, and soon leaves the skin in a comparatively dry and healthy condition. The trouble is liable to return at some future time, but can always be readily removed by a few days' use of the powder. The writer cautions against inhalation of the powder during its application, as the acid is liable to cause coughing and sneezing.

11. In a letter addressed to the Society of Medical Sciences, of Lyons, M. Besnier requested information respecting the *treatment of molluscum by enucleation.* His own plan of treatment was to expel the little tumor by the use of a small dermal curette, the skin being slightly stretched. The ablation of the tumor by means of scissors he thought was a procedure generally abandoned. ═══ M. Horand approved of the method of M. Besnier, and likewise the expression of the little tumor by means of pressure at its base with the thumb nails. Ablation with scissors he regarded as useless, and likely to cause the removal of an unnecessary amount of skin. ═══ M. Renant thought that the method of enucleation by pressure with the nails was not so efficacious as the treatment by the curette. ═══ M. Dron had always removed the tumors with the nails, and in his venereal service, where the regulations afforded him an opportunity of keeping his cases under observation, he had never observed a return of the tumor.

19. Aubert, in discussing *the requisite qualities of a parasiticide*, claims (1) that it must be able to kill the parasite, (2) that it must be able to reach the same, and (3) that it must not be injurious to the organism. All the mercurial ointments which have been so generally used are often unable to reach the parasite, and consequently are of no use. The parasiticide application must contain some volatile substance, which may penetrate the aerial lacunæ of the hairs, and its pharmaceutic form must be such as to permit a slow and continuous discharge of vapor. [What the local applications are which will best supply these requirements and supersede epilation, the writer does not state.]

25. Hall reports two cases of *lupus of the nose treated with carbolic acid*, one of two and a half and the other of three years' standing. The acid was applied locally twice a week or oftener, and a marked improvement followed. The first patient, who had taken iron and cod-liver oil internally, was discharged cured at the end of two months, and the second, who had taken arsenic, was cured within a month. [There is a vast difference between the actual cure and the apparent cure of lupus. We believe carbolic acid to be an excellent application in many cases of the superficial forms of lupus, and it is certainly one of the least painful of the various caustics in use. But, as lupus often returns after very severe cauterization, after thorough scraping, after the use of the galvanic or the thermo-cautery, and in some instances after a combination of these measures, we should not care to speak so positively regarding a cure of these cases until six months or more had elapsed.]

27. Van Harlingen has done a good work in collating the literature of *medicinal eruptions*, and has compiled a bibliography which will be of great value for future reference. In his paper are included all reported cases which appeared to him to be even moderately authentic and trustworthy, and consequently we find descriptions of various lesions of the skin which, though following the ingestion of some drug, probably had no dependence upon or connection with it. In reading the widely different effects which a drug has been supposed to exert upon the skin by different reporters, one can hardly fail to be reminded of the multitudinous symptoms which have been soberly recorded by Hahnemann and others as "provings" of this or that drug. And yet there is no doubt whatever that, while the ingestion of many drugs produces a greater or less degree of reflex irritability of the skin, there are some which have the property of causing well-marked and easily recognized forms of skin disease which are justly termed "medicinal eruptions." In the literature of the subject, which is mainly confined to the past five or ten years, there is doubtless much chaff mingled with the wheat, and we can not but regret that the writer has thrown upon his readers the responsibility of sifting it, when his careful study of the various papers must doubtless have fitted him for such a delicate task. As a result of the internal administration of arsenic, nearly all lesions of the skin, from a vesicle to a carbuncle, have been reported. But, as many of these arsenical (?) eruptions were associated with the administration of the drug in very small quantity, and as some occurred only once and persisted after the discontinuance of the remedy, we can hardly refrain from regarding them as mere coincidences. Herpes appears to be the only skin affection which a number of careful observers have ascribed to the internal use of arsenic. The doctrine that zoster may be of arsenical origin is certainly supported by good authority, but from our own experience we should be inclined to agree with Dr. White, that observations have not as yet been sufficiently numerous to prove that the alleged connection is more than accidental. The eruption resulting from belladonna is almost invariably of an erythematous character, usually appearing first upon the face, neck, and upper portion of the body, and sometimes involving the whole cutaneous surface. The resemblance of this rash to that of scarlatina is most striking, and, as in one reported case the patient felt a severe heat in the throat, it is conceivable that an error in diagnosis might readily be made. The bromine eruption resulting from the bromide of potassium, sodium, ammonium, or lithium, is commonly pustular in character, and is frequently spoken of as bromic acne.

In some cases it has been papular, bullous, and even warty. It occurs in both sexes and at any age, but is especially liable to appear in patients with a thick, greasy skin. It may occur not only upon the face and shoulders, the favorite seat of ordinary acne, but also upon the hairy portions of other parts of the body, showing a tendency to localization similar to that manifested by iodine and tar eruptions. The characteristic eruption of copaiba (one which occurs with inexcusable frequency in the practice of many physicians) is usually erythematous or urticarial in form. It is usually seen upon the hands and arms, but occurs likewise upon the abdomen and lower extremities. Cubebs, when administered alone, rarely causes cutaneous disturbances. The lesions resulting from iodine are exceedingly varied. The most striking and characteristic forms are the bullous and purpuric. Mercury produces no very characteristic eruption, and in nearly all of the cases reported the rash has been erythematous or scarlatiniform. Of course the dermatitis which is so often produced by the free external use of mercurial ointment is not taken into consideration by the writer as a medicinal eruption. Quinine likewise produces an erythematous eruption, as a rule. In some cases it is vesicular and even hæmorrhagic. The chief feature of the quinine eruption appears to be its tendency to attack the skin of the scrotum and genital region.

31, 32. Startin reports a case of *leprosy*, and adds some remarks in opposition to the hypothesis that this disease is in great measure the result of a fish diet, and more particularly a diet of decomposing or unwholesome fish. He believes that the want of vegetable food and continued attacks of fever and ague are the principal causes of leprosy, and expresses his disbelief in its contagious nature. He states that the patient whose case is reported had never eaten any unwholesome fish, and therefore objects to ascribing his disease to such a cause. He furthermore makes the assertion that leprosy abounds in certain localities where fish is never eaten, and that, on the other hand, it is seldom seen among certain tribes among whom fish is a staple diet. ═══ Hutchinson, in reply to Startin, states that he carefully questioned Mr. Startin's patient respecting the eating of fish, and elicited answers which led him to regard the case as one which supported the fish-diet hypothesis, in which he is a decided believer. [We have here an admirable illustration of the contradictory statements which can readily be drawn from the ordinary patient by the use of leading questions, and we embrace this opportunity of pointing out the doubtful value of every hastily written history and the manifest impropriety of using such a history as the basis of a diagnosis or for the support of some pet theory. In cases of suspected syphilis, e. g., it is not uncommon to find many patients who will give a tolerably clear history of either infection or exemption, to suit the desire of the biased examiner, and mistakes in diagnosis, arising from an undue dependence upon the imperfect memory of patients, are of too frequent occurrence. As regards the history of leprosy patients, we can readily believe with Mr. Hutchinson that as soon as a leper understands that his disease is considered to arise from an unwholesome fish diet, he naturally denies that he has ever partaken of a morsel of decomposed fish, and often goes so far as to assert untruthfully that he has never been in the habit of eating fish at all.] As the result of his personal experience, Hutchinson states that he has never met with a single case of leprosy in which the fish hypothesis was impossible. The assumption that the disease is the result of a poison introduced into the system by the ingestion of unwholesome fish does not imply that the patient must necessarily have subsisted upon a fish diet, or even have partaken of decomposing fish to any great extent.

QUARTERLY REPORT ON ORTHOPÆDIC SURGERY.

No. III.

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27. Swan, R. L.—The treatment of genu valgum by condylotomy with chisel. "Dublin Jour. of Med. Sci.," Dec., 1880.

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32. Stillman, C. F.—Report of a case of talipes equino-varus, successfully treated by continuous stretching. "Med. Record," Oct. 9, 1880.

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14. In the *treatment of hip disease* the extension has been regarded as a means (1) of overcoming the muscles spasmodically contracted about the diseased joint; (2) of simple fixing of the joint; (3) of separating the bones forming the joint. In order to determine the function of extension, the following observations were made on the cadaver. The body of a child two years of age was first used. Needles were driven, one into the pelvis and another into the trochanter, on the same side; the flesh above and below the needles was incised, so that traction upon the limb, necessarily involving the soft tissues, did not drag upon the needles. An extending force of one hundred and fifty pounds was applied, the pelvis being fixed. No difference in the distance between the needles could be noticed on careful measurement. In a second experiment, on an adult, with the needles inserted in the same way, an extending force of one hundred pounds was applied, but no separation of the needles was observed. The muscles were all severed, the fascia lata was cut, and the capsule of the joint was exposed, but not opened. Extension caused no separation of the needles. The capsule of the joint was then opened, cutting across the ilio-femoral ligament, but no difference was found in the relation of the needles. The head of the bone was dislocated and replaced, but even then the needles could not be pulled apart by extension. The head was evidently held in place by the fibrous collar surrounding the acetabulum. It appears, then, that extension does not separate the femur from the acetabulum when the parts are in the normal, fully developed condition. Atmospheric pressure holds the head of the bone firmly in place. If, however, the collar, which is essential to a tight ball-and-socket joint, be not firm, the yielding of the soft parts allows the head to be drawn from the acetabulum. The author would infer that the relief given by extension in some cases of hip disease is due to the actual separation of the bones involved in the joint, but that in the early stages of the disease there is no separation. In these cases the extension prevents the crowding the head of the femur against the acetabulum, by counteracting the muscular spasm. If the pelvis is steadied, efficient fixation of the joint can be obtained by extension. The paper is based upon twenty-one cases, and from a study of these cases the author's conclusions are: that the treatment of hip disease should be based neither upon any one method nor upon the use of any splint. The morbid condition is an osteitis near the joint, with subsequent invasion of the latter, or a primary synovitis exciting a neighboring osteitis; the process is accompanied by a spasmodic contraction of the neighboring muscles, which aggravates the inflammation by increasing the pressure on the inflamed bone. At different times and in different cases one condition, and the consequent indication for treatment, may be more prominent than another; they all, however, need to be borne in mind, and rational treatment consists in thoroughly meeting the indications as they appear. The methods for this purpose will vary according to the experience and skill of the surgeon and the surroundings of the patient, and it is a matter of judgment, in each case, how far absolute immobilization and thorough extension are demanded, when natural fixation suffices, and when exercise is necessary.

17. Willard advocates the use of a *splint for injuries and diseases of the hip joint*, which, while it will hold the hip joint at rest when the patient is standing or in bed, will yet, by the use of a bolt, permit of flexion of the thigh on the pelvis when the patient is sitting down. It consists of two parts: one accurately fitted around the pelvis, the other grasping the thigh, with a joint, opposite the hip joint, that may be locked and unlocked at pleasure. It is constructed of very stiff leather strengthened with steel bands.

18. The authors of this paper have made a valuable contribution to the subject of *hip-joint disease and its microscopical appearances in the early stage.* The patient was a boy of five years of age, one of three children, all of whom were living. His father was in good health; his mother, pale and thin, but healthy, there being, however, a history of phthisis in her family. The boy was pale, the parents were poor, and the hygienic surroundings were bad. One year before coming under observation, without any special known injury, lameness was detected, and after a time he invariably complained of a sense of weariness about the hip at night. The lameness gradually increased until he came under the observation of Dr. Willard. He then showed well-marked symptoms of disease of the hip joint. Six weeks after coming under treatment he became affected with tubercular meningitis, and died. On post-mortem examination, the movements of the joint were found to be somewhat limited, and slight roughness was evident. There were not more than ten drops of effusion, but the synovial membrane was everywhere congested and softened, and at the acetabular attachment of the ligamentum teres there were decided evidences of inflammation and softening of its tissues. Upon the head of the femur, on its posterior upper face, was a discolored patch, possibly caused by post-mortem contact with the acetabulum, although there was no corresponding spot on that cavity, and it had more the appearance of redness situated beneath the articular cartilage. The capsule was perfect, the round ligament was intact, and, while the membrane covering it was more reddened and softened than at any other part, yet there were no positive signs of ulceration to the naked eye—in fact, at no place in the joint were there any evidences other than those of early inflammation. Dr. Shakespeare, who made a careful microscopical examination of sections cut from various portions of the head of the femur and the acetabulum, draws the following conclusions: "1. It is apparent that the intensity of the morbid process in this case of hip-joint disease affects mainly the synovial membrane, and the ligamentum teres and its covering. 2. While there is a slight fatty degeneration of the cartilage cells at the surface of the cartilage, there is no such decided alteration of this kind as Cornil and Ranvier and some other authors believe to be the initial and essential lesion in so-called scrofulous hip-joint disease. 3. While the femoral portion is the more diseased of the two cartilages entering into the formation of this joint, the condition of the cartilages is not sufficiently abnormal to support an assumption that the disease began in them. 4. The bony structure of the neck of the femur, although hyperæmic, is but slightly diseased, and is not tuberculous. 5. The few caseous foci found in the ligamentum teres are the only points in the joint which could be taken for tubercles, and they presented no characteristic of tubercle other than the caseous degeneration of the cells—a distinction insufficient for positive diagnosis of tubercle. 6. The lesions here found may be regarded as those constituting the *first* or *initial stage* of at least one form of hip-joint disease. 7. It is probable that the sequence of the phenomena making the history of the tuberculous processes originated in hip disease obey the same general laws which govern the development of tuberculosis in other portions of the economy. 8. The history of this case, both clinical and pathological, would seem to support the views of those who defend the doctrine that in a certain depraved animal organism inflammatory products tend to caseous degeneration which may ultimately cause a local or general infection of the various tissues of the animal and a limited or extensive irruption of tubercles. 9. The scrofulous or degenerative inflammations of a hip joint need not be more certainly or more quickly followed by tuberculosis, either local or general, than a scrofulous lymph gland is followed by the same disorder." In commenting on this case, Dr. Willard draws attention to the facts that there may exist a considerable amount of disease without much suffering, and that, although there was no osteitis present, yet reflex spasm existed, and would seem to controvert the statement that spasm in joint disease is always a symptom of inflammation of the bone. The case is a valuable contribution to the pathology of hip disease.

21. This case of *acute necrosis of the head and neck of the femur* is of interest. It occurred in a child of six years of age. An abscess rapidly formed after a fall upon the limb three months previous to the child's coming under observation. At this time the thigh was greatly swollen, and the temperature was high. On freely cutting into the abscess the bone was exposed and found denuded, and the joint was disorganized. Some months later the shaft of the femur was found dead, and was divided below the trochanter minor and removed, together with the necrosed epiphysis. Below the point of section the shaft was dead and surrounded by an involucrum, from which it was removed. The patient did well.

24. The author does not consider *genu valgum* as due to depression of the internal condyle, but that, in fact, it is only an occasional condition. He looks upon this deformity as due to flat-foot, and in its treatment he thinks the first thing necessary is to restore the arch of the foot. He advocates dividing the external lateral ligament, the ilio-femoral band, and sometimes the tendon of the biceps. He is not an advocate of osteotomy.

26. This was a case of *genu valgum* for which osteotomy of the femur was done, the section being made from the *outer side* of the femur, and not, as is usual, from the inner side. Firm union was obtained in four weeks.

28. The author sums up *the advantages of Ogston's operation for genu valgum* as follows: 1. It is an operation mechanically correcting a mechanical defect. 2. Its conduct is simple, safe, and satisfactory. 3. No special antiseptic precautions are needed. 4. Its good results are rapidly gained; the tendency toward aggravation of the deformity is lessened. 5. There is but little risk to the patient, and the operative impression seems to be permanent. 6. All future use of instruments at the hands of the surgical mechanician is abolished. The last two conclusions are common to all other operations for the relief of genu valgum.

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Miscellany.

Brushfield on Certificates in Lunacy.—Dr. Brushfield ("Lancet," Apr. 24, May 1, 8, 15, 29, 1880) gives very extended and detailed advice on the subject of rendering certificates in lunacy, and concludes with the following suggested form of medical certificate: "1. Facts indicating insanity observed by myself on the day of examination.—Appearance, especially facial aspect, attitude, peculiarities of dress. Delusions. (If any, describe them.) Coherency or incoherency. Condition of the memory. Any change in the higher emotions. Condition of the habits and propensities, especially as to change. General demeanor: restlessness, excitement, exaltation, or depression. Other abnormalities. 2. Facts indicating insanity observed by myself on days other than that of the certified day of examination. 3. Other facts (if any) indicating insanity communicated to me by others. 4. Statement of other particulars not contained in the foregoing.—Probable duration of insanity. Supposed cause—exciting, predisposing. Is the patient temperate or intemperate? Any relative known to have had insanity, epilepsy, paralysis, any nervous diseases, chorea. Give details and state relationship. Any defect at birth or in early infancy. Any severe infantile diseases, convulsions during teething, tapeworm, etc. Whether subject to epilepsy; state frequency and character of attacks. Whether dangerous to others; state how, and whether exhibited toward a particular individual. Whether dangerous to self; from non-suicidal motives or suicidal motives. Describe any attempt. If of mischievous, destructive, uncleanly, or objectionable habits of any kind. Condition as to sleep. State of the bowels. If known to have had any disease of the brain, or spinal cord, sunstroke, or injury to the head. Any existing or recent bodily illness. Give details. Present condition of thoracic and abdominal organs. Any recent injuries, or marks of any. State how received, and give description. If a female, report the condition of the uterine functions. Any special diseases or disorders connected with the puerperal condition. The number of children, and age of the youngest. Fitness for removal to asylum. (To be certified on the day of removal.)" [In so minute a scheme, it is remarkable that no special mention is made of the use of opium, chloral, or tobacco.]

Fisher on the Commitment of the Insane.—Dr. Fisher ("Boston Med. and Surg. Jour.," June 17, 1880) comments on the workings of the new law in Massachusetts, described as a product, in part, of a popular demand, not entirely spontaneous, and based on exaggerated fears and unreasonable prejudices. It has, however, been stringently carried out in general. The presence of the insane person in court has been required, except where extreme excitement with debility has existed; and sometimes the judges have visited the patient out of court. The law has not diminished the number of commitments or proved a safeguard against fraud or improper certification, since these supposed evils were imaginary. It has put patients, physicians, and friends to considerable trouble and annoyance, but has put an end to some popular clamor. The effect of appearing in court has been disturbing and harmful to some patients, and given publicity to a painful spectacle, thereby tending to defer admission to hospital till treatment is of little avail. Some dangerous or troublesome patients are likely to be refused commitment because the judge can not discover the insanity, and these are made more likely to go on to the commission of criminal acts. Insane drunkards are allowed full swing unless confined by their own consent. The tendency is to remove the insane person from family and medical control into the hands of the law. The medical opinion must be supported by such facts as would satisfy a non-professional observer that the patient was insane. The judge must be able to discover the insanity. No physician connected with a lunatic asylum can certify in any case, though he really stands as family physician to many of his patients, and his testimony may be absolutely essential to the proper disposal of a case. The fee for certifying, two dollars and mileage, is absurdly inadequate. But the new law is also a safeguard to the physician, protecting him from unscrupulous suits at law, etc. The requirement that the physician shall specify the facts on which his opinion is founded is not generally understood, and in many instances none are given. The requirement that the patient must not be examined in the asylum where he is to remain is occasionally disregarded.

Hocquard on the Pathological Anatomy of Staphylomata.—In his concluding paper ("Ann. d'Oc.," July–August, 1880), Hocquard draws the following conclusions: 1. Irido-corneal staphylomata are divisible into two classes, recognizable by the character of the nucleus. 2. In the first category, the nucleus is delicate, measures no more than 0·2 mm., contains no vessels, and has no proper vitality. It consists of three layers: a very delicate epithelial covering, a subepithelial exudation, and the remains of the iris. 3. Staphylomata of the second category he calls hypertrophic, because of the thickness of their walls. The epithelial covering is like epidermis. 4. In all staphylomata there is a new subepithelial layer consisting of a network of vessels communicating with the episcleral vessels and running in a framework of connective tissue of varying thickness and density. 5. The substance proper of the cornea is entirely transformed; the fibers are swollen and separated, and the interfascicular lacunæ contain a large number of cells which come from lymphoid cells. 6. The peripheral region of a staphyloma varies, according as it is conical or spherical. The preservation of the corneal fasciculi and the maintenance of their parallelism are due to the action of the membrane of Descemet, which in places is actually perforated by holes, through which the iris comes directly in contact with the cornea proper. 7. In almost all spherical staphylomata, there are seen several ciliary processes, extremely elongated and fibrous, which are adherent anteriorly to the internal annular projection. 8. In total irido-corneal staphylomata, in the last stage, there is visible at the level of the peripheral region a particular atrophy of the cornea, characterized by the sinking-in of the corneal fasciculi, the disappearance of a part of the corneal corpuscles, and the obliteration of the interfascicular lacunæ. 9. The iris, closely united with the subjacent tissue, is reduced at points to a band of black pigment. Wherever the membrane of Descemet exists, it is distinctly visible and usually contains a number of blood-vessels.

Abadie on Progressive Myopia and Partial Tenotomy of the Muscles.—Abadie ("Ann. d'Oc.," July–Aug., 1880) holds to the hypothesis that the origin of the staphyloma is in a pressure exerted principally upon the ocular insertion of the optic nerve. The form and constant situation of the staphylomatous crescent can only result from rupture of the choroidal ring by compression of the optic nerve inward; for, if the nerve trunk were pushed backward, the detachment would be complete all around, and the staphyloma would be annular in the beginning. Researches on the cadaver prove this warping of the optic nerve to the nasal side. He again advocates partial tenotomy of the external rectus in cases of insufficiency of the internal recti with tendency to myopia. He, however, adds nothing new to his other papers on the same subject, but contents himself with reiterating what he has previously advocated and defended.

Richet on Circumorbital Cancroids.—Circumorbital cancroids are not common. Richet's patient ("Recueil d'Ophtal.," Aug., 1880) was a man in the decline of life, in whom the disease had existed for fifteen years, and had been twice checked in its growth by cauterizing applications. It originated in the periosteum of the lower orbital margin, and had opened into the cavity of the orbit and into the nasal fossæ, and probably communicated with the frontal sinus. Richet advised the removal of the periosteum of the entire orbital margin, and of the nasal bones, and as much bone tissue beneath as was found diseased; then the enucleation of the eyeball and orbital tissue, and the subsequent application of chloride-of-zinc paste.

Poncet on the Pathological Anatomy of Pterygium.—In preparations comprising conjunctiva and cornea, Poncet ("Progr. Méd.," Sept. 18, 1880) has demonstrated the existence of what he calls a "vibrionic ulcer" in the anterior structureless lamina. These microbes with little spores penetrate into the subconjunctival lymphatic network, and thence little by little into the lymph channels of the cornea. The colloid transformation of the conjunctival epithelium, the development of cystoid spaces lined by cuboid epithelium, and sclerosis of the connective tissue, are the principal changes that occur.

Baber's Osteophone ("Brit. Med. Jour.," Sept. 4, 1880) is a modification of Thomas's rod osteophone. It consists of a number of flat pieces of wood firmly jointed together, the two end segments terminating each in a wooden or ivory knob, with a groove round its circumference. For use, the instrument is straightened out, and one knob is grasped between the deaf person's teeth. The other knob is placed against the speaker's teeth. For persons sitting or standing side by side, the instrument may be curved on the flat into the form of a semicircle.

Parker on Glandular Enlargements in Children.—Parker ("Obstet. Jour. of Gt. Brit. and Ire.," June, 1880) divides these enlargements into two chief classes: (a) Primary disease: lymphadenoma or lymphoma. (b) Secondary disease: adenitis, which may be either acute or chronic. These two latter conditions may run one into the other, or an abscess may quickly form, discharge, and heal up, leaving few if any traces behind. An *acute* abscess of this kind either is due to some active irritation of the part in which the lymphatic radicles take their rise, or may appear to originate spontaneously—that is, the exact cause can not be ascertained. After a free evacuation of the pus, which should be done early with a small tenotomy knife, an evaporating lotion, or evaporating lead lotion, is much preferable to the poultice which is so frequently used. As regards the more *chronic form* of glandular inflammation, it may terminate directly either in (1) ulceration, or in (2) caseification, with subsequent softening and ulceration, or in (3) hypertrophy. In some cases the glands inflame, but the inflammation is of a low type, and ends in ulceration rather than in suppuration. In others, the glands gradually swell; then, after a while, the inflammatory product becomes caseous; at a later period, this caseous mass softens and breaks down. The skin next becomes involved, and after perforation has taken place the hyperplasia is partly thrown off by suppuration; the remainder, however, takes on a form of slow but persistent ulceration, which leads to destruction of adjacent glands and skin. These heal only after many months, leaving unsightly scars. The third variety -- hypertrophy of the glands—is another, though somewhat less frequent, termination of this inflammatory process. But, if these glands could be examined, it would often be found that they were undergoing a very slow caseous transformation, and that they differed from the foregoing in the rate of change rather than in any well-marked pathological feature. Eczema of the scalp or forehead, pediculi, tinea tarsi, strumous keratitis, otorrhœa, ozæna, irritation in the nose, pharyngitis, syphilitic eruptions about the face and mouth, the exanthemata, a general catarrh, are among the predisposing *causes* of the "secondary" affections of the glands. In all cases it is desirable that we should search for the original source of the inflammation, for if it still exist it must be removed before any great benefit can be expected to follow treatment. Remembering always that the scrofulous habit is a predisposing cause, *treatment* should include general as well as local remedies, which latter would probably fail without them. Of all drugs, cod-liver oil is the most generally useful. Iron is next in importance. Iodide of potassium is useful in many cases, but iodism must be avoided. Iodine may be given by inhalation, by mixing a little of the tincture with boiling water and inhaling the steam. Iodine should be applied to that part of the skin or surface in which the lymphatic radicles connected with the diseased gland themselves originate. In children with a specific family history, iodide of potassium is especially indicated and particularly useful, and if there is any reasonable suspicion of congenital syphilis, mercurial inunctions will occasionally work marvels. Change of air—sea-air if possible—is useful. If caseous degeneration or suppuration is suspected, the glands should be punctured early, before the overlying skin has become involved. The indications for operative *extirpation* are: 1. A very chronic condition, of one or two years' standing, during which the glands have slowly grown, without any obvious continued cause for this, the original cause having long ceased to act. 2. The gland being conspicuous and superficial. 3. The disease being local. 4. The general health being good. 5. The ordinary remedies having failed. Primary disease of the lymphatic system is rare, and has to be diagnosticated by a process of exclusion, rather than by any symptoms which, in its earlier stages, are peculiar to the disease.

ITEMS.—We have received three numbers of the "Rocky Mountain Medical Review," a monthly journal, edited by A. Wellington Adams, M. D., and published at Colorado Springs. It makes a very creditable appearance. ═══ The first number of the "Medical Library Journal" (for October, 1880) has reached us. It seems to be largely devoted to reviews of current literature. It is published in Boston. ═══ Dr. D. G. Brinton, of Philadelphia, announces a translation of M. Gubler's work on therapeutics, to be ready March 1st. ═══ Dr. Hermann G. Klotz, the librarian of the Library of the Physicians to the German Hospital and Dispensary of the City of New York, announces that the library is now open to the profession. On application to any member of the staff, except the librarian, a letter of introduction may be had, in exchange for which the librarian will give a ticket of admission, good for one year, entitling the holder to visit the reading-room, and to borrow books. The reading-room will be open from 2 to 5 P. M., except Sundays and holidays. Applications to take books out should be made to the librarian, personally or in writing, on Mondays, Wednesdays, or Fridays (except during July and August). Books must not be kept out over two months. The library is situated at No. 65 St. Mark's Place, and contains nearly 3,000 volumes of German, French, and English medical periodicals. ═══ A Training School for Nurses has been opened in connection with the Brooklyn City Hospital. The superintendent, Miss Pine, is a graduate of the school attached to Bellevue Hospital. The Nurses' Home is at No. 257 Adelphi Street. ═══ The New York Academy of Medicine has signified, by appropriate resolutions (for a copy of which we are indebted to the Secretary, Dr. Edwin F. Ward), its estimate of the value of the night medical service lately established in New York, and its appreciation of the services rendered by Dr. Henri Nachtel, of Paris, France, in promoting the adoption of the plan. Dr. Nachtel is at present urging the New York ambulance system upon the attention of the authorities in Paris. ═══ At the annual meeting of the Alumni Association of the Bellevue Hospital Medical College, resolutions were adopted expressive of the loss sustained by the death of the late Dr. Charles H. Sayre, and ordering "that a page in their book of records be set apart as a perpetual memorial." ═══ The American Neurological Association offers a prize of five hundred dollars, to be known as the "William A. Hammond Prize," and to be awarded at the meeting in June, 1882, to the author of the best essay on the "Functions of the Thalamus in Man." 1. The prize is open to competitors of all nationalities; 2. The essays are to be based upon original observations and experiments on man and the lower animals; 3. The competing essays must be written in the English, French, or German language: if in the last, the manuscript is to be in the Italian handwriting; 4. Essays are to be sent (postage prepaid) to the Secretary of the Prize Committee, Dr. E. C. Seguin, 41 West Twentieth Street, New York City, on or before February 1, 1882; each essay to be marked by a distinctive device or motto, and accompanied by a sealed envelope bearing the same device or motto, and containing the author's visiting card; 5. The successful essay will be the property of the Association, which will assume the care of its publication; 6. Any intimation tending to reveal the authorship of any of the essays submitted, whether directly or indirectly conveyed to the committee or to any member thereof, shall exclude the essay from competition; 7. The award of the prize will be announced by the committee, and will be publicly declared by the President of the Association at the meeting in June, 1882; 8. The amount of the prize will be given to the successful competitor in gold coin of the United States, or, if he prefer it, in the shape of a gold medal bearing a suitable device and inscription. The committee consists of F. T. Miles, M. D., Baltimore, J. S. Jewell, M. D., Chicago, E. C. Seguin, M. D., New York.

Army Intelligence.—*Official List of Changes of Stations and Duties of Officers of the Medical Department, United States Army, from December 14, 1880, to January 13, 1881.*—Baily, E. J., Lieutenant-Colonel and Surgeon. Granted leave of absence for two months. S. O. 277, A. G. O., December 30, 1880. ═══ Baily, J. C., Major and Surgeon. Granted leave of absence for one month, with permission to leave the Division and apply for one month's extension. S. O. 188, Division of the Pacific and Department of California, December 13, 1880. ═══ White, C. B., Major and Surgeon. Relieved from the duty assigned him in S. O. 229, October 25, 1880, from A. G. O., and to report to the Surgeon-General. S. O. 276, A. G. O., December 29, 1880. ═══ Williams, J. W., Major and Surgeon. To report to the Commanding Officer, Department of Arkansas, for assignment to duty, temporarily, as Medical Director of that Department. S. O. 2, A. G. O., January 5, 1881. ═══ Brown, J. M., Captain and Assistant Surgeon. The leave of absence granted him in S. O. 264, December 2, 1880, Department of the Missouri, is extended three months. S. O. 2, C. S., A. G. O. ═══ Meacham, F., Captain and Assistant Surgeon. Assigned to temporary duty at Fort Niagara, New York, during absence on leave of Assistant Surgeon Price. S. O. 6, Department of the East, January 10, 1881. ═══ Heizmann, C. L., Captain and Assistant Surgeon. His leave of absence still further extended two months. S. O. 268, A. G. O., December 18, 1880. ═══ Price, C. E., Captain and Assistant Surgeon. Granted leave of absence for one month and ten days, to take effect on arrival of Assistant Surgeon Meacham at Fort Niagara, New York. S. O. 2, Military Division Atlantic, January 10, 1881. ═══ Comegys, C. T., Captain and Assistant Surgeon. Granted leave of absence for four months on surgeon's certificate of disability. S. O. 4, A. G. O., January 7, 1881. ═══ Burton, H. G., First Lieutenant and Assistant Surgeon. To report in person to the Commanding

General, Department of the East, for assignment to temporary duty. S. O. 7, A. G. O., January 11, 1881. ═══ Kane, J. J., First Lieutenant and Assistant Surgeon. Assigned to duty at Fort Union, New Mexico, as Post Surgeon. S. O. 153, District of New Mexico, December 13, 1880. ═══ Carter, W. F., First Lieutenant and Assistant Surgeon. Granted leave of absence for one month, with permission to leave the Department. S. O. 265, Department of Texas, December 28, 1880. ═══ Benham, R. B., First Lieutenant and Assistant Surgeon. Relieved from temporary duty at Fort Snelling, Minnesota, and assigned to duty at Fort A. Lincoln, Dakota Territory. S. O. 165, Department of Dakota, December 8, 1880.

Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine Hospital Service. October 1, 1880, to December 31, 1880.—Bailhache, P. H., Surgeon. Detailed as chairman board of examiners of candidates for promotion, October 6, 1880. To proceed to Norfolk, Virginia, as inspector, November 1, 1880. Detailed as president board of inquiry to meet in St. Louis, Missouri, November 17, 1880. November 9, 1880. Upon conclusion of duties under orders of November 9, to proceed to Dubuque, Iowa, La Crosse, and Milawukee, Wisconsin, Chicago, Illinois, Detroit, Michigan, and Buffalo, New York, as inspector. November 10, 1880. ═══ Miller, T. W., Surgeon. Detailed as member of board of inquiry to meet in St. Louis, Missouri, November, 17, 1880. November 9, 1880. ═══ Purviance, George, Surgeon. Detailed as recorder board of inquiry to meet in St. Louis, Missouri, November 17, 1880. November 9, 1880. Upon conclusion of duties under orders of November 9, to proceed to Louisville, Kentucky, as inspector. November 19, 1880. ═══ Doering, E. J., Surgeon. Granted leave of absence for thirteen days from January 3, 1880. December 29, 1880. ═══ Smith, Henry, Passed Assistant Surgeon. To proceed to Key West, Florida, and assume temporary charge of the service at that port. December 13, 1880. ═══ Fisher, J. C., Passed Assistant Surgeon. Detailed as recorder board of examiners of candidates for promotion. October 6, 1880. ═══ Keyes, H. M., Assistant Surgeon. To report to president board of inquiry. November 17, 1880. November 10, 1880. ═══ Cooke, H. P., Assistant Surgeon. To proceed to Galveston, Texas, and assume charge of the service at that port, relieving Assistant Surneon Guiteras. December 14, 1880. ═══ Heath, W. H., Assistant Surgeon. Granted leave of absence for twenty days from October 21, 1880. October 20, 1880. To proceed to Buffalo, New York, and assume temporary charge of the service at that port, relieving Assistant Surgeon Cooke. November 18, 1880. To assume charge of the service at Buffalo. December 14, 1880. ═══ Guiteras, John, Assistant Surgeon. To proceed to Galveston, Texas, and assume temporary charge of the service at that port, relieving Passed Assistant Surgeon Smith. December 13, 1880. When relieved by Assistant Surgeon Cooke, to rejoin his station. December 15, 1880. ═══ Wheeler, W. A., Assistant Surgeon. To proceed to Pittsburgh, Pennsylvania, and report for temporary duty to Surgeon Purviance. November 10, 1880. Relieved from further duty at Pittsburgh, and ordered to report to Surgeon Fessenden at New York. November 27, 1880. ═══ Benson, J. A., Assistant Surgeon. To proceed to Boston, Massachusetts, and report for temporary duty to Surgeon Vansant. October 15, 1880. ═══ Banks, C. E., Assistant Surgeon. To act as inspector of unserviceable hospital property at San Francisco, California. November 2, 1880. ═══ *Resignation.*—Brown, F. H., Passed Assistant Surgeon. Resignation accepted by the Secretary of the Treasury, to take effect November 5, 1880. October 7, 1880. ═══ *Promotion.*—Goldsborough, C. B., Passed Assistant Surgeon, promoted to be Passed Assistant Surgeon from October 14, 1880. October 14, 1880. ═══ *Death.*—Glazier, W. C. W., Assistant Surgeon. Died at Key West, Florida, of yellow fever, December 12, 1880. ═══ *Dismissed.*—Keyes, H. M., Assistant Surgeon. Dismissed the service, to take effect December 31, 1880. December 24, 1880.

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THE ANATOMICAL SEAT OF THE FUNGUS IN TINEA TONSURANS CAPILLITII.

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The parasite present in tinea tonsurans capillitii is the vegetable fungus, trichophyton tonsurans. The form of eruption produced by the presence of this fungus in or upon the human skin depends upon the anatomical structure and upon the irritability of the histological elements of the affected part. The different forms of eruption have received different names, according to their form or anatomical seat; thus, we have tinea circinata (ringworm), tinea tonsurans capillitii, tinea tonsurans barbæ (sycosis parasitica), eczema marginatum, and kerion; but it is to be remembered that it is the anatomical character of the affected part, and the irritability of its histological elements, that produce the different pathological conditions in the different cases.

The fungus consists of spores and mycelia. The slower the process of multiplication of the fungus, the greater is the number of spores present in proportion to the mycelia, and *vice versa.* As the eruption produced by the trichophyton tonsurans spreads peripherically, more mycelia in proportion to the spores are present at the circumference than at the center of the affected area. In tinea tonsurans capillitii I have always found a much greater number of spores than mycelia present, but Kaposi ("Pathologie und Therapie der Hautkrankheiten," Wien, 1879, p. 736) has made the contrary observation.

The anatomical seat of the trichophyton tonsurans in tinea tonsurans capillitii is still a matter of dispute. According to Kaposi (*Ibid.*, p. 736), the fungus in tinea tonsurans vesiculosa, squamosa, and maculosa is found between the upper layers of the nucleated epidermis, directly beneath the corneous layer; and in tinea tonsurans capillitii it is present also in the hair and in the hair sheaths. Two drawings representing the fungus (rich in mycelia) accompany the text of Kaposi's article.

In the "Lancet" of March 30, 1878, p. 459, Dr. Thin, of London, gives an account of the appearances he observed in sections of the skin from a case of ringworm in a horse. He found the fungus present only among the most superficial scales of the corneous layer, and on the shaft of the hair, and between the shaft and the internal root sheath. It was never found in the root sheaths, in the root of the hair, nor in the hair papilla or in the surrounding connective tissue. "The affected hair first bends and then breaks at a point usually midway between the rete Malpighii and root of the hair, this bending and subsequent breaking being caused by the disintegrated hair yielding to the pressure produced by the normal growth of the shaft upward. Sometimes extensive changes were found in the cutis and rete Malpighii, but they did not differ from inflammation of these structures, however induced."

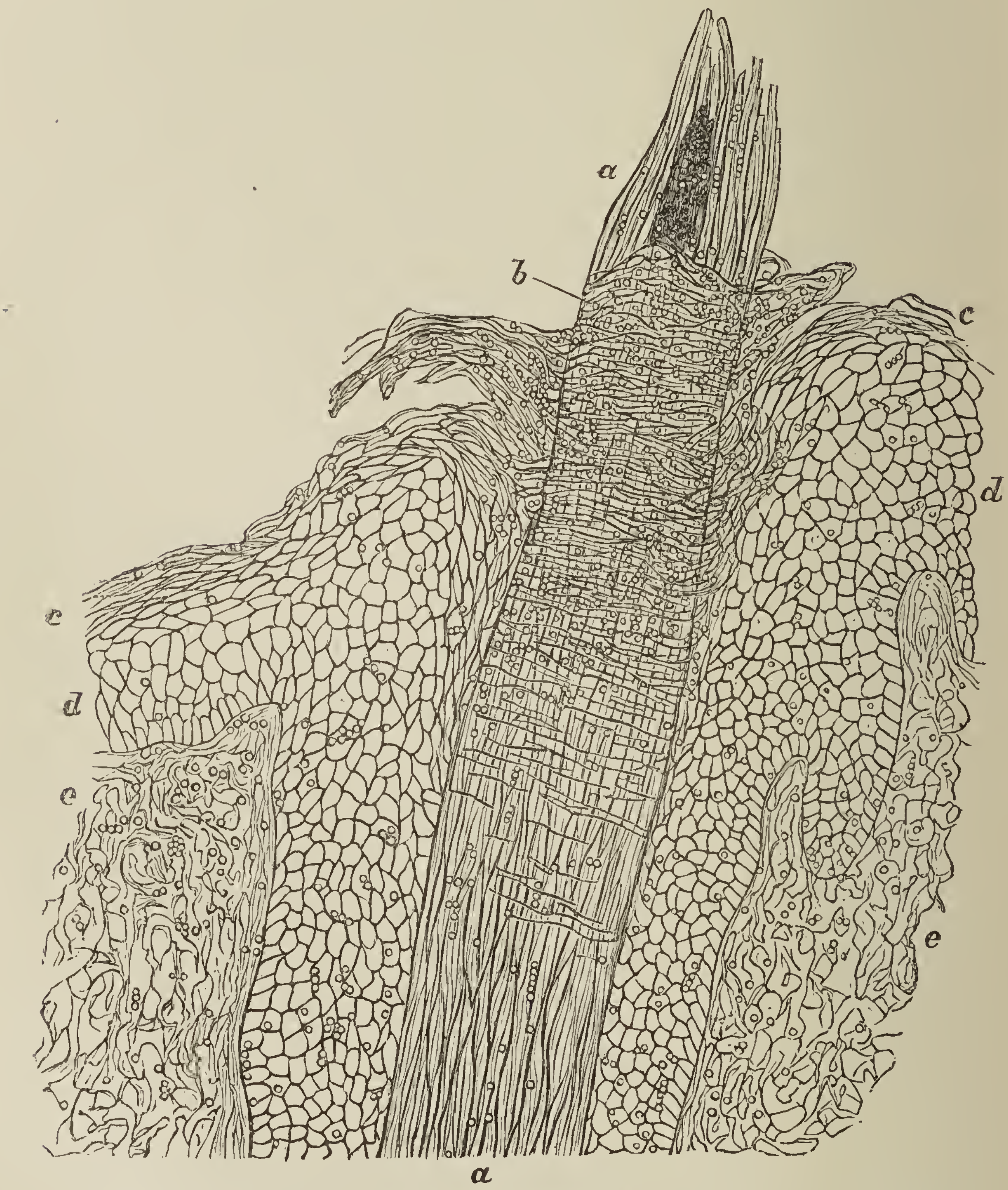
Shortly after Dr. Thin's report, Dr. F. Taylor, of London ("Lancet," Nov. 16, 1878), contributed a paper upon the subject, based upon the microscopical examination of a patch of tinea circinata. He found that in the early stage the hair retained its form, and had within it simply a varying number of mycelial threads running parallel to its length. In a later stage the hair is obscured by a crowd of spores closely packed in the follicle. "In a downward direction the fungus does not extend beyond the upper end of the hair bulb, and the papillæ are never invaded. Laterally the spread of the fungus is limited by the inner root sheath, with which in advanced stages the spores are in contact. The integrity of the sheath is maintained even when the follicle is choked with spores. The fungus is never found in the external root sheath, rete mucosum, corium, or subcutaneous tissue. The hairs were not broken or twisted."

According, therefore, to Dr. Thin and Dr. Taylor, the fungus is never present and actually can not exist among living animal tissues, but lives upon effete epidermic structures. Their observations were made from sections of the affected skin, and can be considered reliable as regards the two individual cases examined; but the authors were hardly justified in forming from them definite conclusions as to the anatomical seat of the fungus in every case of the disease. Kaposi merely examined extracted hairs and detached epithelium from the corneous layer—a most imperfect mode of studying the situation of the fungus, as it only enables one to judge of the presence or absence of the fungus in a portion of the skin. If, however, Kaposi saw the fungus in the rete Malpighii (and his drawings represent it as very abundantly present), then the question as to its ability to exist in living tissues is settled. In tinea tonsurans barbæ, Lang ("Ueber eine seltenere Form der parasitären Sykosis und einige entzündliche Geschwülste," "Viertelj. f. Derm. u. Syph.," 1878, p. 393) found the fungus, especially in recently affected hairs, in the hair shaft, hair root, and root sheaths. He examined only extracted hairs. In kerion, Majocchi ("Gazzetta Medica di Roma," No. 5, 1877) found the fungus within the hair follicle, along the hair shaft, and also in the connective tissue around the follicle.

From the above-mentioned observations we are justified in accepting the view that the fungus trichophyton tonsurans can exist and grow in living tissues. That it does not extend to the living matter in every case of tinea tonsurans capillitii, is proven by the observations of Dr. Thin and Dr. Taylor.

My own observations have been made at intervals during the last two years. Two years ago I excised an affected portion of skin from the scalp of a boy who had tinea tonsurans capillitii. He was sixteen years of age, and had had the disease about four months. The affected area of skin was about two inches in diameter, and circular in shape. Signs of an inflammatory process were observed only at the margin of the patch, and these showed that this process was only a slight one. There was slight redness, and a scurfy condition was present. The more central part was normal, or perhaps slightly paler than normal, in color, and fully three fourths of the hairs had fallen out. Many of the remaining hairs presented the appearances characteristic of the disease. Owing to the unusual appearance of the more central part of the patch, a microscopical examination was made of the broken hairs and of some epidermic scales, and the diagnosis of tinea tonsurans capillitii was confirmed. A few applications of a six-per-cent. solution of oleate of mercury destroyed the fungus, and in two months the part was provided with normal hair. The excised portion of skin was taken from the margin of the patch, and included both normal and diseased tissue, while in depth it extended to the periosteum. After removal it was washed with water, to remove any blood from the surface, then placed in Müller's liquid, and finally in absolute alcohol. The sections made were treated in many ways, some being examined in glycerine without previous staining, and others colored with carmine, hæmatoxylin, methyl-aniline, or iodine. Caustic potash in varying strength, the strongest solution containing one part of potash to eight parts of water, was generally made use of for further study of the sections. A few sections were boiled in ether, and others were treated with turpentine, nitric or acetic acids. The different manipulations were employed to aid in the study of the

Fig. 1.



a, hair shaft; *b*, internal root sheath; *c*, corneous layer; *d*, mucous layer; *e*, corium.

sections, and to correct, if possible, errors of previous observation. Some of the specimens drawn (Figs. 1 and 2) were shown to Dr. W. H. Porter, of the School of Histology, who can certify to the general correctness of these figures.

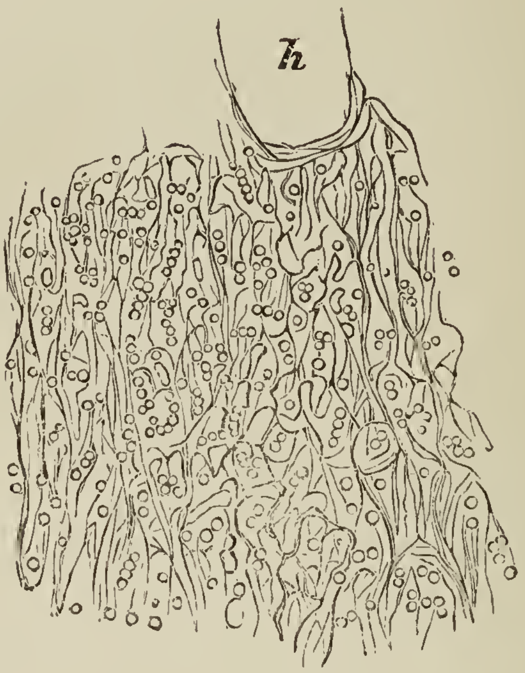
From a study of the sections the following observations were made as to the condition of the different parts of the skin. In Fig. 1 the epidermis, corium, and part of a hair are represented. In the corneous layer the fungus was present in some places in great amount. It consisted of spores and mycelia, the former being much more abundant than the latter. In some places it was most abundant between the cells of the uppermost layers, and at other places between the cells of the lower layers. Altogether the greatest number of fungus elements were between the cells of the upper layers. In Fig. 1 there are very few to be seen in the corneous layer. In reality the number present was very considerable, but in this section the upper layers of cells, as well as many of the fungus elements in the deeper layers, became detached by the manipulations with the section. The greatest number in the corneous layer was observed where this structure surrounds the hair, forming a part of the internal root sheath, that is, from the neck of the hair follicle to the free surface. In Fig. 1 the fungi are well shown in this situation, the internal root sheath being here in focus. It will be observed that nearly all of the fungus elements in this layer in Fig. 1 consist of spores, either isolated, grouped, or arranged in rows, but in some sections a considerable number of mycelial threads were present.

In the rete Malpighii both spores and mycelial threads were present. The spores were either isolated, grouped, or arranged in rows. There were rarely more than five or six spores in any group or row. They were generally present in greatest number in the upper part of the external root sheath. Their number did not always bear a direct relation to the number present in the corneous layer directly above them. Sometimes the corneous layer would contain a great number, and the rete beneath it would have only a few isolated spores, and *vice versa*. The mycelial threads were few in number and very short. Isolated spores are sometimes very difficult to detect in the rete. The section must not be deeply colored.

In the corium, spores were found in varying quantity. They were either isolated, grouped, or arranged in rows (see Fig. 1). The individual spores were either round or cylindrical. In some parts of the sections the fungi were absent. In Fig. 1, on the lower part of the left side, they were no longer to be observed.

In the subcutaneous tissue (see Fig. 2) spores were found in great number in the tissue surrounding an empty hair follicle (*h*).

Fig. 2.



Here they were as plentiful as in any part of the corneous layer. The specimen which showed them most distinctly, and in greatest number, was unfortunately destroyed by the covering glass. This specimen had previously been studied by Dr. Porter. In Fig. 2 the connective tissue is only partly represented. Here the spores were both round and cylindrical. A few cylindrical ones were of considerable thickness. Apart from this one place, but few spores were seen in the subcutaneous tissue.

Around the root of the hairs represented in Figs. 5 and 6 isolated spores were observed. In this patient the presence of the fungus in the rete and connective tissue produced but very slight inflammation. Only in the neighborhood of the empty hair follicle, as represented in Fig. 2, were there signs of an inflammatory process, and there the connective-tissue bundles were not destroyed.

In Fig. 3 I have represented the amount of fungus elements frequently observed in the free hair shaft near the skin. This piece of hair shaft was found among the epidermic cells, in another case of tinea tonsurans capillitii under my care. The effect of so much fungus is to completely destroy the integrity of the hair at that place.

In Fig. 4 is represented the effect sometimes produced upon a hair stump where fewer fungi are present. This drawing was made from a section of the excised skin, and shows changes very similar to those observed in Figs. 1 and 7. Spores and mycelial threads were present in small quantity, and the hair shaft is seen to be divided up into more or less broad longitudinal fibers. The fibers show an occasional transverse fracture.

Fig. 3.

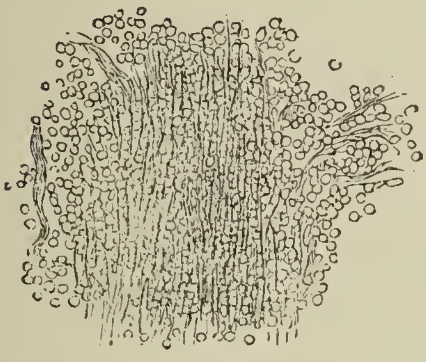
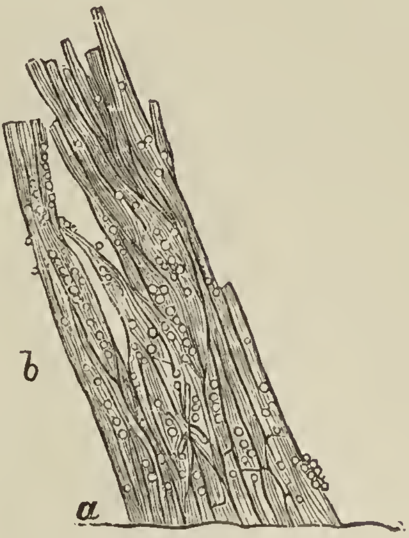


Fig. 4.



a, free surface of skin; *b*, hair stump.

Fungi were found in all parts of the hair situated within the skin, but the greatest number were present in that part situated above the neck of the follicle. I have observed them in the root of the hair. The effect upon the hair may be the bending mentioned by Dr. Thin. (See Figs. 5 and 6.) The explanation given by Dr. Thin I believe is correct. In Fig. 6 spores were present in the

Fig. 5.

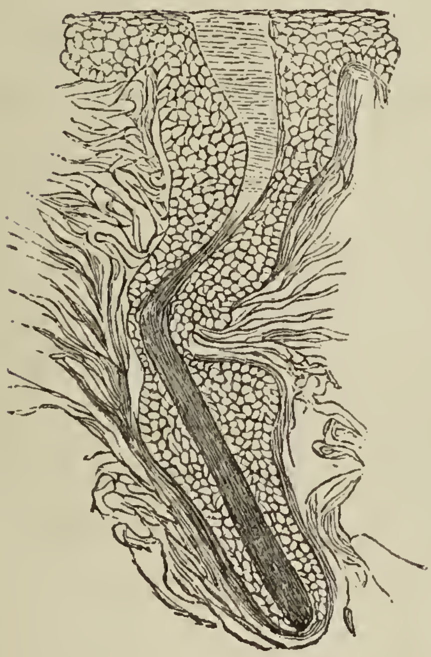
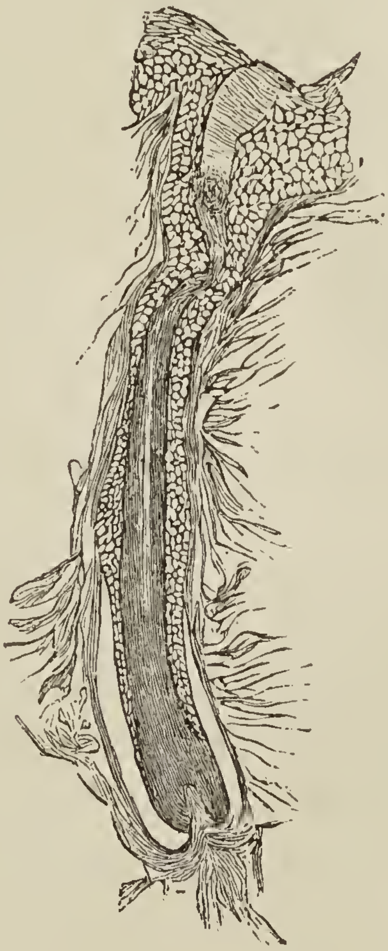
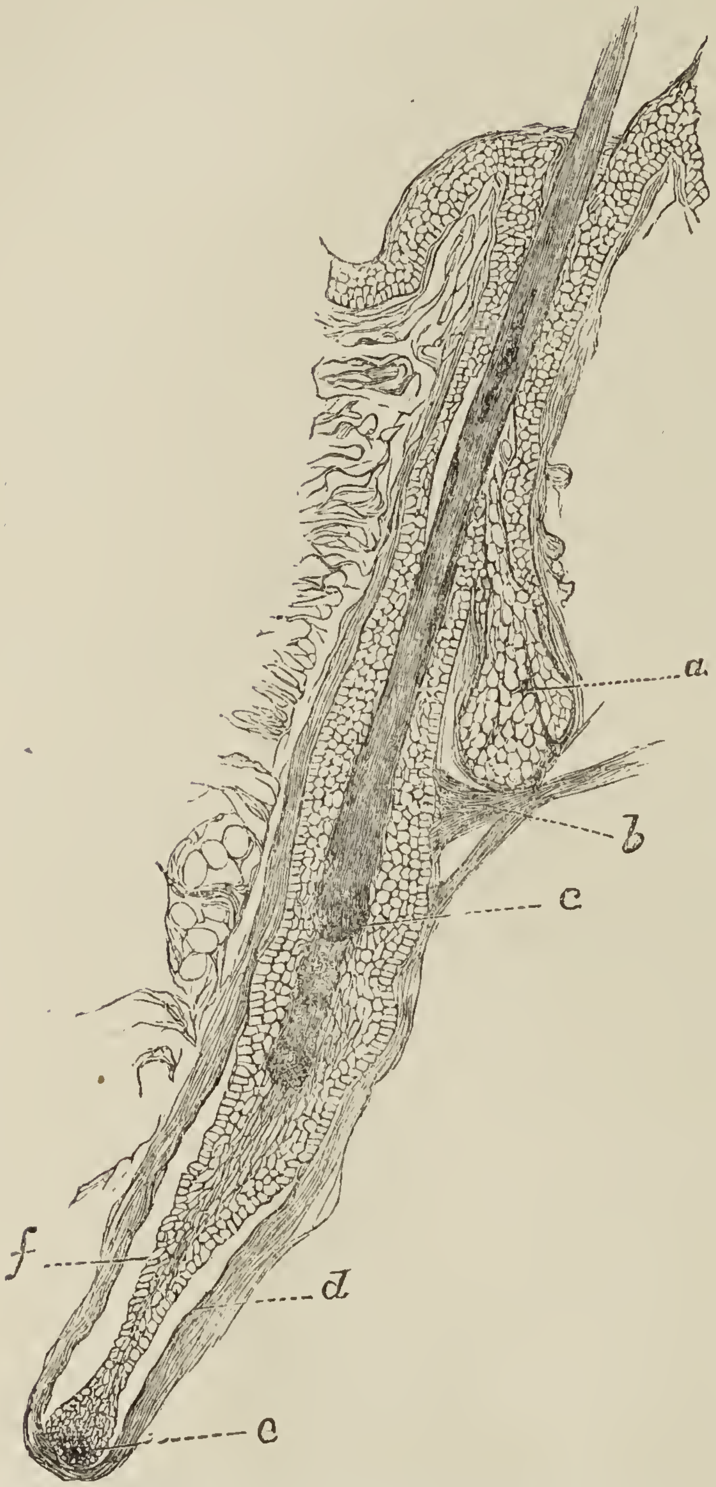


Fig. 6.



root of the hair. Here the internal follicle sheath is separated for some distance from the external root sheath. This hair was in process of being cast off. In Fig. 7 is represented a later stage of this same process. As the changes are the same as in the normal death of a hair, they need not be further described. There has been an interference with the nutrition of the hair roots in the hairs represented in Figs. 6 and 7. This, however, did not depend upon fungi within the hair follicle, as they were present in too small number to have produced such a result. I would attribute it to an interference with the nutrition of the whole skin at the seat of the disease. Spores were found in the duct of the sebaceous gland and in the free extremity of the sweat duct.

FIG. 7.



a, sebaceous gland; *b*, muscle; *c*, pigmented end of hair shaft; *d*, internal follicle sheath; *e*, root of hair; *f*, external root sheath.

From these observations we would conclude that the anatomical seat of the fungus in tinea tonsurans capillitii is different in different cases of the disease. It may be seated only in the corneous layer and hair shaft, or it may extend even to the subcutaneous tissue. Probably in those cases in which a large number of hairs fall out entire the fungus extends deeper than in those cases of only stubbed hairs. The deep seat of the fungus in some cases is probably the cause of the occasional obstinacy of the disease and difficulty of cure.

A CONTRIBUTION TO THE PATHOLOGY OF ORBITAL TUMORS: BEING A STUDY OF THE SECONDARY PROCESSES IN THE PERIOSTEUM AND BONES OF THE ORBIT AND VICINITY.*

By CHARLES STEDMAN BULL, A. M., M. D.,

LECTURER ON OPHTHALMOLOGY AND OTOLOGY IN THE BELLEVUE HOSPITAL MEDICAL COLLEGE; SURGEON AND PATHOLOGIST TO THE NEW YORK EYE AND EAR INFIRMARY; OPHTHALMIC SURGEON TO ST. MARY'S FREE HOSPITAL FOR CHILDREN, AND TO THE NURSERY AND CHILD'S HOSPITAL.

It is by no means uncommon for recurrent orbital tumors to involve the periosteum and bone, even when all possible precautions have been taken against their return at the time of their removal by operation. In many of these cases some of the morbid cellular elements have been left in the shreds of orbital tissue, or in the many fissures and sinuses communicating with the cavity of the orbit. But it seems not improbable that in some cases the periosteum or bone may have been the primary seat of the disease, which, in the majority of instances, is either pure sarcoma or myxo-sarcoma, or more rarely fibro-sarcoma. Although most orbital tumors, especially those arising from the connective tissue of the orbit, are sarcomatous in their nature, it is not safe to always so consider them. Tumors are often anomalous, only because they are met with in a locality in which their elements do not always exist. When a morbid growth in the orbit has been removed, either with or without enucleation of the eye, the chances of its return are much smaller if it has been found encapsulated; and, when in such a case the orbit again becomes filled, we have to choose between assuming a nidus of disease left behind and a new secondary tumor. But the presence of pathological cellular elements presupposes either a wandering of cells through blood-vessels or lymphatics, or both, into the neighboring tissues or cavities, or else a new formation in the locality itself. If we accept the former view, which is preferable, we assume that these wandering pathological cells become massed together and fixed in the capillaries, act as emboli, and here increase. The origin of cell formation is not different in pathological processes in this locality from what it is elsewhere in the body, and will not be discussed here. Let it suffice to say that giant cells, or the myeloplaxes of Wagner and other modern pathologists, are mother cells, containing daughter cells, and that they occur especially in sarcoma. Wagner thinks that, where these giant cells occur in bone tissue, they are probably metamorphosed osteoblasts; and, according to Kölliker, they are osteophagi or bone-eaters, because they dissolve bone tissue. Be this as it may, they are certainly of importance in the sarcomatous tumors of bone, and this is especially so in the bones of the orbit. They are sometimes too few in number and too inconstant in their occurrence to materially change the character of the tissue in which they occur; but in many sarcomata they give the character to the entire neoplasm by their great number.

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* Read before the Medical Society of the State of New York, February, 1881.

The secondary processes observed in bone and periosteum, which form the subject of this paper, are a general infiltration, softening, and degeneration of bone tissue, and the development of exostoses and osteophytes from and in the walls of the orbit. The subject of true osteomata, or of osteo-sarcomata, does not come within the scope of the paper any more than does hyperostosis. This process of infiltration is strictly one of disintegration, in which the apparent destructive power of the giant cells seems to be paramount. The development of pathological bone tissue takes place generally from new-formed or normal connective tissue, especially from periosteum, and it probably arises but seldom from pure osseous tissue. The growth of new-formed osseous tissue is in part interstitial, and mainly intercellular, through increase of the intercellular substance. But in this pathological infiltration of the bone with sarcomatous elements there is little or no intercellular substance. As regards the osteophytes, the process is different. The modern definition of an osteophyte is "an osseous neoplasm firmly attached to the surface of bone, but distinguished from the latter by its spongy texture and great vascularity." In the writer's cases, however, the osteophytes arose from the periosteum, as the result of what seemed like periostitis ossificans, with a special predilection for the roof and inner wall of the orbit. Some authors regard both exostoses and osteophytes as examples of osteoma, and call the former homologous osteomata, while the osteophytes are called heterologous osteomata. According to Green, for example, exostoses are outgrowths from preëxisting bone, but may grow from the periosteum, and become dense and eburnated; and this is especially the case in the orbit. He says also that there is usually a line of demarkation between them and the subjacent bone. On the other hand, the heterologous osteomata, or osteophytes, originate apart from bone, and grow from connective tissue, especially in tissues in the neighborhood of bones which have been the seat of chronic inflammation; and hence are inflammatory formations. But it seems to the writer that this statement should be modified, at least so far as the orbit is concerned.

Here the osteophytes certainly do not occur in the free orbital tissue, but are always attached either to the periosteum, from which they arise, or to the bone itself; and it may be stated with positiveness, that the metamorphosis of neoplastic inflammatory products into osseous tissue occurs especially in tumors which proceed from bone or periosteum. The development of these osteophytes, as the result of the metamorphosis of the cellular elements of plastic inflammation, seems to be not a very uncommon complication of recurrent orbital sarcomata; and in some instances this process of bone growth may be seen by the side of bone disintegration, produced by the infiltration of the bone tissue with the myeloplaxes of sarcoma. How far these processes go on side by side, how intimate the connection between the two may be, and which comes first in the order of time, it as yet seems very difficult to decide, though it is probable that the osseous disintegration by infiltration with giant cells is the later process of the two. The question has been raised whether these two processes, exostosis and bone disintegration, are not different steps of the same process. A careful microscopic examination of these osteophytes has shown that they may be either diffuse and laminated, or warty and like stalactitic projections from the bone surface. According to Wagner, they consist in the early stage of a reticular osseous tissue, a vessel surrounded by fibrous tissue running in the center of the spaces. As they grow, the bony mass increases, mostly in concentric strata, which deposits fill the spaces until nothing is left inside but the vessel, and eventually the latter may disappear. The osteophytes then either remain permanently, or, as Wagner suggests, may disintegrate; a dissolution of the osseous tissue takes place, and the secondary or spongy state is reached. Whether this stage is identical with that in which the bone is infiltrated with giant cells, like those contained in the sarcoma of bones and the orbit, is a matter which will admit of discussion.

Sarcoma is recognized as belonging to the group of connective-tissue tumors, but is distinguished from types of this group by the preponderance of its cellular constituents, both in size and in number. In the orbit the amount of connective tissue is considerable, though the meshes are very loose and most of them large, and we should naturally expect to find in sarcomata developed here a considerable amount of connective tissue; but this is not often the case. The intercellular substance here, though it may be fibrillar, is very apt to be granular and even homogeneous, while the cells enormously preponderate.

The influence of locality upon the development of sarcomata is said to be clearly evident, the osteo-sarcomata appearing on the surface of bones, while the softer forms, rich in cells, arise in the medullary cavity. But in the orbit it would seem as if the tumors were very frequently of the medullary variety. A myxomatous element is very often present in sarcomatous tumors of the orbit, especially in the recurrent growths. As a rule, the more developed the cellular element of a sarcoma is, the more rapidly does it grow and the farther it extends, and this is especially true of the orbit. Here the neoplasm does not grow in one direction only, but in all directions along the small blood-vessels and lymphatics, though it may tend to grow more in one direction than in others. Another fact to be remembered, as of especial importance in the orbit, is that, when these tumors recur after extirpation, the recurring growths are always richer in cells than the original tumor; they consequently grow much more rapidly, and are more apt to be myxo-sarcomatous than purely sarcomatous.

The size and rapidity of growth of a tumor in the orbit are usually indicative of its nature, and its growth here seems generally to be entirely beyond the laws which govern ordinary development in the body. Of course, in all cases of malignant orbital tumors, the great danger is the extension of the growth into the cavity of the skull. This may take place through the preëxisting normal anatomical canals or openings, like the optic foramen or the sphenoidal fissure, or by destruction of the roof of the orbit by caries, beginning, according to Perls, as an osteitis, and ending in meningitis and encephalitis. The more frequent form of extension is, however, probably by dissemination of the cellular elements of the tumor, and this is especially so in sarcomata. In this connection it should be mentioned that, in operating for the removal of a primary intra-orbital sarcoma, careful anatomical search should be made through the entire orbit for the presence of enlarged lymphatics or infiltrated glands, as these are a common channel of propagation and a frequent cause of the recurrence of the tumor.

The following three cases illustrate the changes in the bones of the orbit and face referred to. They were under the author's care for varying lengths of time, and the patients underwent a series of operations for the removal of the tumors.

Case I.—*Encapsulated Orbital Sarcoma; Extirpation; Return of the Growth as a Myxo-Sarcoma; Infiltration of all the Bones of the Orbit, and of the Facial Bones of the Left Side in general; Three Operations for the Removal of the Tumor.*—J. H., aged twenty-two, first seen December 15, 1879. Was perfectly well until two weeks before, when he noticed that the left upper lid began to droop, and the left eye protruded. The ptosis and exophthalmus steadily increased. There had been convergent squint in the left eye since childhood. When he presented himself, the ptosis covered about two thirds of the cornea, there was slight protrusion of the eye, and the motility of the eyeball was limited in all directions, but mainly outward and inward. There was nothing abnormal in the fundus, not even any change in the retinal circulation. $V = \frac{20}{XX}$ in both eyes. On the 22d he began to complain of a constant dull pain in the orbit, and the ocular conjunctiva of the external rectus became chemotic. The arteries upon the optic disk became narrowed, and there appeared signs of perivasculitis. There was a faint regurgitant murmur, heard at the apex of the heart, and a murmur at the base with each sound. On the 24th there was discovered on the floor of the orbit a hard, resisting growth, reaching from the infra-orbital notch to the external canthus, which pressed the lower lid forward and could be followed for some distance into the orbit. It was very sensitive on pressure, and the seat of a constant dull pain. There was no pulsation felt or seen, nor any bruit heard. Vision had sunk in the left eye to $\frac{20}{CC}$, which with a convex 12 spherical could be improved to $\frac{20}{L}$. The patient was urged to allow an operation to be done for the removal of the growth, but declined, and withdrew himself from treatment.

Nothing was seen of him till February 16, 1880, nearly eight weeks later, when the exophthalmus was very marked, the eye being shoved upward and inward; the lower half of the cornea was opaque, and the upper half anæsthetic. There was a dense infiltration of the palpebral and ocular conjunctiva below the horizontal meridian. The lower lid was completely everted, the eyeball immovable, and vision reduced to faint perception of light. The orbital growth was very prominent at the external canthus, and exceedingly sensitive, and the patient suffered constant pain that had worn him to a shadow. The operation was performed on February 18, 1880, the conjunctiva being split parallel to the lower cul-de-sac, from the middle outward to the canthus. The tumor was found to extend far back toward the apex of the orbit, but was enucleated with comparative ease, as it was found to be encapsulated and only loosely adherent to the orbital tissue. Only one point of firm adhesion was found, and this was to the outer side of the sheath of the optic nerve. The orbital tissue was found so densely infiltrated by the products of cellulitis that it was decided to enucleate the eye. A careful examination of the orbit was then made, to determine whether there were any more growths, but none were discovered. The cellulitis was most marked on the floor and outer side of the orbit, and seemed to have been caused by the presence of the tumor. The patient did well from the beginning, and the orbital cellulitis slowly subsided. On March 20th the orbital tissue and the conjunctiva were still so infiltrated as to protrude slightly through the lids, and a plastic operation was done for the removal of some of the thickened tissue, for the purpose of enabling the patient to wear an artificial eye. This was successful, but on April 5th there were well-marked signs of recurrence of the tumor in the orbit, the lower lid being again pressed forward.

The second operation for the removal of the growth was performed April 13th. It was found to be closely adherent to the periosteum of the margin and floor of the orbit, and reached back to the apex—in this differing from the first tumor, which was encapsulated and nowhere very adherent. It seemed more like a general infiltration of the orbital tissue, and was very vascular—in this point also differing from the first tumor. Its adhesions to the periosteum at the lower orbital margin were extremely firm, exciting a suspicion that the tumor was an outgrowth from the periosteum. The operation was very tedious, and the patient lost a great deal of blood, as the external canthus had to be slit, in order to give more room to work in. The orbit was cleaned of everything as completely as possible, and the periosteum was stripped up from the lower margin and floor of the orbit as far back as could be reached. The roof and inner wall of the orbit did not seem to be involved by the growth, and were left undisturbed. The orbit was then washed out with a five-per-cent. solution of carbolic acid, and then painted over with a forty-grain solution of zinc chloride. In spite of this, the hæmorrhage was so profuse that the orbit had to be plugged. Violent inflammatory reaction followed in the skin and subcutaneous tissue of the lids, cheek, and temples, and the plugging of borated cotton had to be removed. The orbit was then washed again with the carbolic-acid solution, but the hæmorrhage again recurred. This led to a further careful examination of the orbit, and the growth could be seen presenting in the sphenoidal fissure and optic foramen. Plugging was resorted to and maintained for thirty-six hours, but then the plug had to be removed, owing to the erysipelatous condition of the lids and cheek. Under the influence of iron and quinine internally, and hot lead-and-opium applications externally, this condition subsided in about two weeks, and then the patient did well. On June 11th both lids were retracted and adherent to the external angle of the orbit, and the lower lid was adherent to the lower orbital margin throughout the external two thirds. The cavity of the orbit was much contracted, but there was no demonstrable return of the growth. On June 25th a hard, firm nodule, as large as a hazel-nut, was found over the malar prominence, firmly adherent to the periosteum, but not to the skin. This continued to grow, and on July 30th another nodule was discovered on the orbital margin, near the inner canthus, as large as a bean, firmly adherent to the periosteum and connected with another growth in the orbit, near the *inner* wall.

On September 7th he presented himself for another operation. The pain was constant and severe, and had been for several weeks, but there were absolutely no head symptoms at any time. The tumor outside the orbit covered the malar bone, extended over upon the superior maxilla and outward upon the temple, filling the temporal fossa. It was irregular, and had a nodulated surface, and the skin was drawn tightly over it, but was not adherent. The growth filled the orbit, involving the floor and the inner and outer walls, and the outer third of the upper lid. An incision was made along the lower lid margin, as in the Arlt-Jaesche operation for entropium, and was extended two inches from the external canthus toward the ear. Another incision was then made from the inner end of the first incision down, along the nasal furrow, to the ala of the nose. This skin-flap was then carefully dissected up and reflected from the growth, and during this process several vessels had to be tied. The extra-orbital portion of the tumor was then cleared from the superior maxilla and malar bone with some difficulty, and also from the temporal fossa as far as practicable. The orbit was then again thoroughly cleared, but the hæmorrhage was profuse, and interfered greatly with the operation. There was a large hole through the floor of the orbit opening into the maxillary sinus, the bone having been disintegrated and absorbed by infiltration with the myeloplaxes, and the antrum was found filled with the growth. There was also a ragged hole anteriorly through the wall of the antrum, just above the alveolar arch. After the hæmorrhage had been checked, the growth was found to fill the left nasal sinus, the ethmoid cells, and the sphenoidal fissure; and the ethmoid, lachrymal, and part of the sphenoid bones were found so infiltrated with the growth that the finger could be pushed through, showing that the bony tissue had disintegrated and been absorbed. From the roof of the orbit quite a number of straight and hook-like osteophytes projected, and the whole surface of the bone was roughened. On the outer wall of the orbit, especially near the external angle, the bone was infiltrated and disintegrated by the cellular growth, as in the inner wall. Around the hole in the anterior surface of the superior maxillary bone there were some small osteophytes, showing that this hyperplastic tendency in the diseased periosteum existed here also. There were no signs of any spongy exostosis springing from the superior maxilla, such as is often met with. It was deemed unsafe to meddle with the osteophytes growing from the roof of the orbit, for fear of opening into the cranial cavity. The orbit was, therefore, again washed out with a solution of carbolic acid, the flap of skin was replaced over the superior maxilla and kept in position by sutures, and the outer half of the opening was closed by bringing the remains of the lids together with sutures. There was a good deal of inflammatory reaction from the severity of the operation, but the patient did fairly well under stimulant and restorative treatment, and the flap united perfectly.

On October 13th there was a recurrence of the growth in the cheek, evidently proceeding from the antrum through the hole in the anterior surface of the maxilla. This grew with great rapidity and was very painful, and the patient was more exhausted than at any previous period; but the writer did not deem any further operative interference justifiable. Though all the bones of the face on the left side, except the lower jaw, were involved, as well as the frontal, ethmoid, and sphenoid bones, there had never been any head symptoms, the direction of the growth having been outward rather than inward.

A microscopical examination of the original encapsulated tumor showed it to be a sarcoma of the small round-cell variety, with a few fusiform cells. Each of the recurrent growths showed a greater increase of the fusiform and of the large giant cells, with an admixture of mucoid tissue, answering to the appearance of myxo-sarcoma. In places there were very large numbers of giant cells, and this was especially the case in the last growth, in the portions removed from the ethmoid and superior maxillary bones.

Case II.—*Intra-ocular Sarcoma; Secondary Infiltration of the Optic Nerve and Orbit; Degeneration of the Bones of the Orbit and Face; Four Operations for the Removal of the Growth.*—Julia M., aged twenty-six, first seen July 7, 1879, gave the following history: Sixteen months before, while recovering from confinement, she found, one morning, that she was totally blind in the left eye, and that the eye diverged. It remained in this condition, quiet and painless, till six months ago, when she again became pregnant, and since then there has been constant pain in the eye, temple, and supra-orbital region. An examination showed a normal cornea, the anterior chamber almost abolished, the iris nearly in contact with the cornea, the pupil dilated *ad maximum*, and the lens pushed far forward toward the cornea. In the upper and outer quadrant there was a small ciliary staphyloma, and the tension was perceptibly increased. An intra-ocular growth being suspected, and there being no reflex from the fundus and no vision, enucleation was advised and consented to. Some difficulty was found in dividing the optic nerve, owing to the thick, hard nodule of tissue which surrounded the nerve at its entrance into the sclera, and extended for some distance backward along the nerve. The latter was therefore drawn as far forward from the optic foramen as possible before being divided. On opening the eyeball, an intra-ocular growth was found nearly filling the interior, apparently starting from the choroid, which had perforated the sclera in the vicinity of the nerve entrance. The vitreous was absorbed, the retina was entirely detached and jammed against the lens, and the iris was retracted at the periphery. The distal end of the optic nerve looked healthy, and there was no apparent infiltration of the orbital tissue.

The patient was discharged at the end of a week, with directions to report once a week, but she was not seen till August 27th, when the growth was found to have returned in the orbit, and the conjunctiva bulged forward. As she was about to be confined, it was thought best to postpone the operation; but when again seen, on October 30th, five weeks after confinement, she presented a horrible appearance. The tumor had grown with alarming rapidity, had entirely filled the orbit, and protruded through the widely distended lids for a distance of over two inches. There was great swelling of the skin of the forehead, temple, and cheek, due to the great pressure produced by the tumor. The skin of the lids was livid, the palpebral aperture was distended almost to bursting, and there was an agonizing, gnawing pain in the orbit and head. The surface of the neoplasm was bleeding, and discharged a thick puriform fluid of fœtid odor. An incision was made with scissors along the ciliary margins of both lids, so as to free the conjunctiva completely from the lids, and then, by means of the blunt hook, scissors, and the finger, the adhesions of the growth to the orbital walls were broken up—none being found close and dense, except near the apex of the orbit. After the main mass of the tumor had been removed, an examination showed that the orbital margin at both the internal and the external canthus was diseased, the periosteum being perforated and infiltrated, and the bone roughened. There was profuse hæmorrhage, which was with difficulty controlled. The orbit was then thoroughly cleaned out, and as much as possible of the growth which projected from the optic foramen and sphenoidal fissure was cut off. The orbital margin was then cleared of its periosteum, and the bone was thoroughly scraped. The general periosteal lining of the orbit did not seem to be diseased. The cavity was then washed out with carbolized solutions, packed with carbolized sponges, and covered by carbolized dressings and a tight bandage. There was very little inflammatory reaction, and the patient rapidly recovered. On December 3d there was noticed a suspicious nodular swelling in the skin of the upper lid at the external angle, which was dense, somewhat elastic, attached to the bone, and grew forward and inward toward the median line, closing the orbital aperture in this direction.

On December 27th this recurrent tumor was excised. The external canthus was divided for a distance of an inch and a quarter. The outer two thirds of the upper lid were removed with the growth, which was found to be only loosely attached to the periosteum. The latter was found diseased, and was removed from the exterior and interior of the orbit in all directions as far as its condition was at all suspicious. The bone was found infiltrated, especially the external angle of the frontal, and was removed by the rongeur and scraper to a considerable depth. The orbit itself appeared empty, and was not disturbed. The patient did very well, and improved steadily in health till March 8th, 1880, when a well-defined nodule was seen at the inner end of the upper lid, and extending over on the nose and into the lower lid, and another nodule in the outer third of the lower lid. These nodules grew rapidly; she complained of great pain in the orbit and head, and the whole left side of the face became red and swollen. On March 13th the lids burst open; there was a profuse discharge of blood and pus, and the pain almost entirely ceased. The tumor again filled the orbit, had broken through the line of union between the lids which closed the orbital aperture, and presented as a bleeding, fungus-like mass.

On March 17, 1880, the fourth operation was done. The internal canthus was divided horizontally as far as the median line of the nose. The remains of the upper and lower lids were dissected up from the growth and thrown back, and the orbit was then slowly cleaned out with hooks, scissors, and finger. The growth was very soft and exceedingly vascular. The roof, floor, and inner wall of the orbit were found very much diseased, rough, necrosed, and infiltrated in places to such a degree that the bone crumbled on pressure. The whole roof was covered with osteophytes, straight and hooked, all sharp and hard, like stalactites, and between them there were several small openings into the cranial cavity. The os planum of the ethmoid was completely honeycombed; there was a large opening through the lachrymal bone into the nasal fossa, and one into the maxillary sinus through the floor of the orbit. The ethmoid cells were changed into one large cavity, containing *débris* of bone and some of the cellular growth. After all the detritus was removed that it was deemed safe to touch, the cavity was carefully and slowly cleansed and then plugged with borated cotton. The patient reacted well, and, union at the two canthi being complete on the third day, the sutures were removed.

The patient did well until May 11, 1880, when the tumor reappeared in the orbit, coming from the antrum and ethmoid and from both canthi, the bone itself being the source. No further operation was deemed of any use, and the patient was admitted to a general hospital, where she lingered until November 23, 1880, when death occurred. No autopsy was allowed.

In this case the tumor was originally an intra-ocular choroidal sarcoma, which had perforated the sclera near the optic-nerve entrance, involved the sheath of the nerve, and thence spread to the orbital tissue. As an orbital growth, therefore, its seat was primarily in connective tissue, and it subsequently involved the periosteum and the orbital walls. The choroidal sarcoma was of the usual small round-cell variety, and presented nothing peculiar in its course. The orbital tumor was at first sarcomatous, though the proportion of mucoid tissue was less than in the previous case. But the number of myeloplaxes was large, and their number grew greater, in proportion to the other cellular elements, with each recurrence of the tumor. In this case, in spite of the holes of communication between orbit and cranium through the roof of the orbit, there were no head symptoms until just before death.

In both these cases the influence of operative interference in hastening the recurrence of the tumor seemed very marked. They both seem to show, also, that the stripping up and removal of diseased periosteum hastens the return of the disease in the bone, even when the latter has been carefully scraped at the time. Both cases show the general deformity of the orbit through disintegration and destruction of the bony walls; and both illustrate how long a malignant process can go on in the bony wall and sinuses separating orbit from brain without any complication being set up in the vital organs within the skull. Certainly in the second case there was good reason for expecting meningitis of the left anterior fossa, with encephalitis and abscess, and yet the patient remained free from any head symptoms until near the end.

Case III.—*Fibro-Sarcoma of the Orbit, involving the Periosteal Lining, and subsequently the Bones of the Orbit and Face.*—W. J., aged forty-eight, first seen in January, 1880, gave the following history: For many years he had suffered from an obstinate naso-pharyngeal catarrh with profuse discharge, which five years ago extended to the nasal duct and lachrymal sac. An abscess formed on each side of the nose, which was opened, and afterward the usual operation for stricture of the duct was done, and since then he had had very little trouble. Early in the winter of 1878–'79 the left eye began to protrude, and there was also some swelling of the lids and cheek. The conjunctiva became chemotic around the cornea, and there was considerable muco-purulent discharge. There was not much change in the parts till April, when the discharge ceased, the chemosis disappeared, and vision began to fail. From this time the exophthalmus rapidly increased and the vision as rapidly diminished, while the eyelids and left cheek became very much swollen. In May the skin of the cheek became so tense that it ruptured in two places, one just over the malar prominence and the other just below the internal canthal ligament. Through these openings exuded a thin purulent discharge. There had been for some months a dull, heavy pain deep in the orbit, but the patient only spoke of it when questioned directly on the subject. When he presented himself for examination the exophthalmus was very marked, the eye being pushed forward and inward toward the median line, so that it was nearly on a plane with the bridge of the nose. It was almost immovable, there being still, however, a little motion inward. The cornea was slightly cloudy, but the iris and pupil were normal, and $V = \frac{10}{C}$. An ophthalmoscopic examination showed the media clear, except the slight haziness of the cornea, and a moderate degree of neuro-retinitis, with not much swelling of the disk, except in the infero-nasal quadrant, where it had all the appearances of choked disk. There were three external openings, two in the cheek and one in the lower lid near the external canthus. All three pouted, resembling very closely the mouths of sinuses leading down to necrosed bone, and discharged a small amount of thin pus, of a very offensive odor. The patient was unusually stupid, and could with difficulty be communicated with. A probe, introduced into either of the three openings, passed for some distance into the orbit, but no dead bone was struck. The opening near the inner canthal ligament seemed to communicate with the nasal sinus and the ethmoid cells, for a probe passed into a cavity that led off from the orbit. The eyeball could not be replaced in the slightest degree, and the growth in the orbit was very firm and dense.

The patient was urged to have the eye removed and the entire contents of the orbit cleared out, but declined, as he still had considerable vision in the eye.

He was not seen till the following June, when he presented a horrible appearance. Vision was entirely lost, the cornea had sloughed, the contents of the eyeball had gradually been discharged, and the pain was constant and very severe. The intra-orbital growth presented through the openings in the lids, the latter being distended to their utmost capacity. The tumor was not particularly vascular, but its surface discharged a thin, offensive pus. It was hard, firm, closely attached to the periosteum of the orbital walls, and extended down upon the malar and superior maxillary bones, and outward upon the temple. From the intimate connection between the growth and the periosteum at the margin of the orbit, it was suspected that the bones forming the inner wall of the orbit were involved. The remains of the eyeball were first removed, and then the contents of the orbit dissected out. The adhesions to the periosteal lining were everywhere very close, and hence it was extremely uncertain whether the growth began in the loose connective tissue of the orbit or in the denser tissue of the periosteum. When the region of the ethmoid bone was reached, the os planum was found to have almost entirely disappeared, and the growth filled the ethmoid cells and extended into the nasal sinus. On lifting up the tumor, a hole was discovered in the floor of the orbit, leading into the antrum, through which, also, the growth extended, and, as far as could be judged by the introduction of a probe, it filled the antrum. It was not deemed wise to enlarge this opening, but as much of the tumor as could be reached with forceps and scissors was removed. The interior of the ethmoid bone was softened and broken down and infiltrated with the cellular elements of the growth. A flap of skin was then dissected from the superior maxilla and malar bone, its apex being at the inner canthus, and the lines of incision running, one along the margin of the lower lid and from the external canthus out half an inch upon the temple, and the other down the nasal furrow to the ala of the nose. The periosteum and growth attached to it in this region were then carefully removed as far as there appeared any morbid growth, and the bone was scraped. After the orbital cavity had been carefully washed out, the deep growth of the tumor was seen to penetrate so far into the cavities and sinuses connecting with the orbit that it was not thought advisable to attempt any further removal. It was seen that the lachrymal bone had disappeared by disintegration and absorption, that the ethmoid, frontal, and superior maxilla were deeply involved, and that probably all the deep bones of the face on the left side were implicated. The flap of skin was replaced and attached by numerous sutures, and the orbit was packed with borated cotton. The patient reacted well from the operation, and the wound healed rapidly; so that at the end of three weeks the patient could be discharged, free from pain, and with very little secretion from the orbit. The holes in the skin of the cheek, however, did not show any tendency to cicatrize. The patient left the city, and has never been seen since.

A microscopic examination of the tumor showed it to be, contrary to expectation, a fibro-sarcoma, with, however, very extensive cellular development. Where the fibro-sarcomatous character was most pronounced, the cells were generally fusiform; but the nearer the bone the tumor was examined, the more cellular elements appeared, both round and fusiform. None of the round cells were very small, and in the periosteum and in the detritus removed from the ethmoid cells were numbers of giant cells or myeloplaxes.

It does not seem probable that there was any connection in this case between the chronic inflammation of the nasal ducts and the malignant disease in the orbit. Though, no doubt, the long-continued disease of the ducts had led to periostitis, and perhaps caries of the bony walls of the ducts, yet the most that could be expected would have been an extension of the carious process to neighboring bones. It seems probable in this case that the growth started in the periosteum, the reason for this supposition being its fibro-sarcomatous nature; and that the bones were involved somewhat early in the course of the disease. Though in this case the direction of the growth was both outward and inward, yet the main efforts were spent in extension outward, as in the two other cases; and this explains the long freedom from head symptoms, even though there were direct channels of communication with the cranial cavity by disintegration of the bony wall.

If one may draw conclusions from these three cases, it would seem that such cases are not fit subjects for operative procedures. When the periosteum of the orbit or the orbital cellular tissue is involved, it does not seem possible to remove *all* the growth, owing to the nature of the parts; and any mass of cellular infiltration, no matter how small, becomes at once a starting-point for more rapid growth than before. With each operation there follows an increased rapidity of growth, the tumor showing a tendency to change from pure sarcoma to myxo-sarcoma. When once the bones of the orbit are involved, the writer does not believe that any further operative interference should be attempted. The rapidity of growth among the small bones of the face and base of the skull, and their disintegration by infiltration with the large sarcoma cells, is very marked, especially in the case of the ethmoid and sphenoid bones; and the small amount of good attained by an operation is but temporary, and is far outweighed by the dangers of the operation, the severity of reaction, and the rapid recurrence of the growth.

ON THE METASTASES OF INFLAMMATIONS FROM THE EAR TO THE BRAIN.*

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The beginning of an encephalitis is always difficult to define, and this is especially so when caused by disease of the ear. Acute suppurative otitis does not commonly prove fatal; here the pains in and about the ear are often so intense as to almost completely obscure any symptoms of brain disease which may exist. But it is more particularly in connection with chronic purulent otitis that we have the brain implicated. In this form of the disease the more acute symptoms are not always present, and the inflammatory process goes on for months, and even years, insidiously forcing its way through the parts in the temporal bone until it has reached the brain. When the extension of the ear disease occurs in this gradual manner, the primary congestion of the encephalitis is most likely to be slow, and the brain symptoms to be but slightly marked or entirely absent. This is especially observable in chronic abscess ot the brain caused by caries of the petrous bone, which, by gradual extension of the inflammation through the dura mater to the parenchyma of the brain, declares itself by little else than a slight headache, and attains to complete maturity, when suddenly an apoplectiform or convulsive attack calls our attention to an extensive destruction of the brain. The initial phenomena of abscess of the brain do not, as Lebert has tried to show, present anything characteristic. Slight headache is the only symptom complained of. Headache was the initiatory symptom in two thirds of Meyer's cases of abscess of the brain; therefore, somewhat more frequently than in brain tumors, where, according to Ladame,* it ushered in the phenomena of the disease in one third of the cases. The intensity of the headache varies greatly: in one case it is almost unnoticeable, in others it excites excessive complaint by the patient. Generally it increases with the duration of the disease, and is more continuous, and occurs less in paroxysms than the headache of brain tumor. The headache is sometimes accompanied with fever, but this is often absent, and we find vertigo, less frequently vomiting, and seldom convulsions or paralysis. The intensity of the initiatory headache indicates neither an acute nor a chronic course of the purulent encephalitis; the headache may be absent in the most acute cases. (Meyer, *op. cit.*, p. 38.) Next to headache, Meyer found fever to be the most frequent early symptom in one eighth of his cases. High fever with chills, at the beginning of the brain symptoms, would seem to indicate that new purulent infiltration had taken place around an old inflammatory focus; or, in a recent case, that multiple foci were being formed in the brain; or it would arouse our suspicion of complicated thrombosis of the sinuses.

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* Read before the Richmond County Medical Society.

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* "Symptomatologie und Diagnostie der Hirngeschwülste," 1865. Meyer, *op. cit.*

Convulsions were the first symptom in one tenth of Meyer's cases. The convulsions were mostly general, accompanied by loss of consciousness and followed by sopor, as in an epileptic attack. Neuralgia, anæsthesia, and disturbances of the intellect as early symptoms, are rare. An ophthalmoscopic examination may prove of considerable value.

The course of the purulent encephalitis will depend on whether it is acute or chronic. In the chronic form, the abscess becomes encapsuled; in the acute form, this does not take place; in the former, death occurs from rupture of the abscess into the ventricles or upon the surface of the brain, or from acute œdema; and in the latter, from increasing suppuration and consequent destruction of the brain substance. In the acute abscess there is, as a rule, little or no period of latency, and the disease ends fatally in from eight to fourteen days after the initiatory symptoms. In many cases, the duration is from three to six weeks. The chronic abscess is characterized by a prolonged period of latency, which intervenes between the early congestive stage and that of the development of the purulent formation. Sometimes the latency is interrupted by a slight degree of headache. In some very rare instances of abscess of the brain absolutely no symptoms occur which excite suspicion of its existence. Such a case has been recorded by Schrœder van der Kolk.* The duration of the latency varies from a few weeks to several months. The longest known duration of brain abscess is that observed by Härlin,† in which the traumatism occurred twenty-six years before death. In another case, recorded by E. Schott,‡ abscess of the brain followed an injury sustained twenty-one years before. The period of latency being once disturbed, the end of the disease is soon reached. In thirty-four cases of chronic abscess of the brain given by Meyer, in which the period of latency could be pretty exactly separated from that of the subsequent phenomena, the latter ran their course

Within	1 week	in 13	cases.
"	2 weeks	" 7	"
"	3 "	" 4	"
"	4 "	" 4	"
"	5 "	" 4	"
"	6 "	" 1	"
"	9 "	" 1	"

The terminating processes in abscess of the brain are, extensive œdema of the brain with white softening, rupture externally upon the surface of the brain, and rupture into the ventricles, to which is often added a purulent effusion upon the base of the brain. In a small number of cases, death is caused by anæmia of the brain; and occasionally, especially in abscess of the cerebellum, we must assume an implication of the medulla oblongata, without, however, our being able to demonstrate this post mortem. The clinical history of rupture into the ventricles is the most distinct. According to Meyer, it consisted, in seventeen cases, of symptoms of irritation in the motor centers, generally with febrile disturbances and psychical excitement, followed by limited or general paralysis of motion and sensibility, coma, and death. In regard to the relation between the locality of the inflammatory focus in the brain and that of the headache, as a general thing, they correspond, provided the headache be localized.

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* "Pathologie und Therapie der Geisteskrankheiten," 1863; Meyer, *op. cit.*, p. 44.

† Quoted by Bruns, "Handb. d. Chirurg."

‡ "Ueber Gehirnabscess." "Würzburger med. Ztschr.," ii, 1861, p. 462.

When inflammation of the pia mater occurs as the result of ear disease, it is always associated with, and secondary to, inflammation of the dura mater. Pachymeningitis, or inflammation of the dura mater, is perhaps always a secondary disease, and, as such, Niemeyer declares, "accompanies fissures, and especially caries, of the cranial bones, particularly of the petrous and ethmoid bones."

Inflammation of a sinus of the brain, with consequent thrombosis, or even thrombosis of the sinus with subsequent inflammation of its walls, occurs proportionately often, being most frequent in the sinuses lying on the petrous bone, the lateral and the petrosal. This is evidently because inflammation and thrombosis of the cerebral sinuses is induced, in the great majority of cases, by caries of the petrous bone advancing to the base of the skull. The numerous patients suffering from tedious otorrhœa, as a result of otitis interna, are constantly threatened, as with a Damocles's sword, by inflammation or thrombosis of these sinuses. Not infrequently the thrombus undergoes purulent degeneration, and particles of it may enter the efferent veins and lead to embolism and metastatic inflammation.

Chronic pachymeningitis, which causes thickening of the dura mater, and its firm adhesion to the cranium and ossification of the thickened layer, may be accompanied by headache and other symptoms; but these are not at all characteristic, and do not show us what the disease is. The symptoms and course of *acute pachymeningitis externa* are almost always so modified by the symptoms of the original disease, by complications with extensive inflammation of the pia mater, and by extension of the inflammation to the cerebral sinus, with its results, that it is impossible to give a pure description of the disease. If an injury of the skull, or still more, if a caries of the temporal bone, due to otorrhœa, be accompanied by unusually severe and extensive pain in the vicinity of the diseased bone, by fever, vomiting, dizziness, noise in the ear, twitching, delirium, and other symptoms of irritation of the brain, which are subsequently followed by those of depression, and finally by general paralysis, we may conclude that the disease of the bone has at first caused inflammation of the dura mater, and later diffuse inflammation of the pia mater. The first stage is often short and indistinct, and on the first visit, or at their reception into the hospital, we find the patients in deep sopor. But even in such cases the above diagnosis may be made with tolerable certainty, if we find an injury of the skull, or particularly a chronic otorrhœa, and can discover no other causes for the brain disease.*

A thrombus of a sinus of the brain either results from extension of a thrombus in a neighboring vein into the sinus, or occurs primarily in the sinus. Wreden † was the first author to direct attention to the necessity of differentiating, pathologically, the different sinuses of the brain. This observer considers that the little practical use which has been made of our present knowledge of inflammation and thrombosis of the cerebral sinuses is to be accounted for, not by the nature of the disease, but by the unscientific use of collected material, since authors have not hitherto sufficiently considered two important facts: 1, "The strict difference between thrombosis and phlebitis; 2, the special pathological difference between the cerebral sinuses."

The differentiating characteristics of thrombosis and phlebitis of the cerebral sinuses, which Wreden has obtained from an analysis of one hundred and fifty-one cases of disease of the sinuses of the brain, by other authors, are in harmony with the experimental labors of Panum,‡ Billroth,§ and O. Weber,‖ and he sums up as follows:

Thrombosis is due to mechanical influences which retard the current of blood in the sinus, as (1) diminished propulsive force of the heart (marantic thrombosis); (2) incomplete emptying of the right heart, in consequence of impeded expansion of the lungs (engorgement thrombosis [Stauungsthrombose]); (3) narrowing of the lumen of the sinus in consequence of pressure upon the sinus by tumors, foreign bodies, etc. (compression thrombosis); (4) coagulations in the efferent, or larger afferent veins (extension thrombosis).

Transformation of the thrombi into pus, with ulcerative destruction of the walls of the sinus, never takes place; also no hæmorrhage *ex sinû.* It is not accompanied by fever, and produces considerable engorgement of the vessels lying behind the sinus involved. Consecutive hæmorrhage into the base of the brain and its membranes is especially frequent; while encephalitis and meninigitis are rare. Pyæmic symptoms are entirely wanting.

Phlebitis occurs from propagation of the inflammatory processes in the vicinity of the sinus to the walls (*per contiguitatem*), or by direct traumatic injury of the same, or by extension of the phlebitic process (*per continuitatem*) from single, larger, communicating veins. It is most frequently caused by a purulent inflammation of the cranial bones, dependent upon osteo-phlebitis, which extends to the contiguous sinus, and leads to suppurative inflammation and destruction of the walls of the sinus. The walls of the sinus are variously affected. In the majority of cases, there is a fully developed purulent phlebitis, which is characterized by a tendency to ulceration and perforation of the walls of the sinus. The thrombus is impregnated with a puriform fluid, discolored, soft, and smeary. Organization of the thrombus does not take place. Profuse hæmorrhage from the ulcerated and perforated sinus hastens the fatal termination of the disease in many cases. It occurs preferably in the transverse sinus. It is accompanied by violent fever, and produces less significant symptoms of engorgement than thrombosis. Encephalitis and meningitis, as well as metastatic processes in other organs, occur very frequently.

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* F. von Niemeyer, "Text-Book of Pract. Med." Translated by Hackley and Humphrey. New York, D. Appleton & Co.

† "St. Peter med. Ztschr.," xvii, 2, 3, p. 71, 1869.

‡ "Experimentelle Beiträge zur Lehre von der Embolie." Virchow's "Archiv," xxv, pp. 308–338, and 433–530.

§ "Beobachtungsstudien über Wundfieber und accidentelle Wundkrankheiten." "Arch. f. klin. Chirurg.," ii, pp. 325–511; vi, p. 372; viii, pp. 52–168.

‖ "Experimentelle Studien über Pyämie, Septicämie, u. Fieber." "Dtsch. Klinik," 1864–1865.

In regard to the clinical phenomena, Schwartze* considers that thrombosis and phlebitis of the transverse sinus, due to otitis media, can be determined only when pyæmic symptoms are present, i. e., irregularly recurring chills, and signs of metastatic deposits in the lungs, spleen, kidneys, or joints. So long, he asserts, as these phenomena are wanting, and only symptoms of irritation of the brain are present, which may depend upon the concomitant meningitis or encephalitis, the diagnosis is always a hazardous one.

The symptoms of thrombosis of the sinus mentioned by Gerhardt and Griesinger as pathognomonic of the disease, Schwartze maintains, are not reliable. Gerhardt laid special stress on the lesser distention of the jugular vein, which receives its blood from the obstructed transverse (lateral) sinus. But this unequal filling of the jugular veins seems to admit of no positive conclusion as to the seat of the existing thrombus in the sinus, since Schwartze has described a case in which just the opposite condition obtained in regard to the filling of the vein: a large thrombus existed in the posterior part of the superior longitudinal sinus, extending into the transverse and petrosal sinuses; the jugular vein was enormously distended on this side, while on the opposite side this was not the case.

Schwartze, moreover, considers the symptom of a painful œdema over the mastoid, mentioned by Griesinger as diagnostic of the disease, as still more unreliable. This condition, Griesinger believes, is due to the extension of the thrombus through the emissary vein, which leads from the sigmoid sinus through the mastoid foramen to the exterior of the skull. However, Wreden confirms this œdematous swelling in the region mentioned as a symptom of phlebitis of the lateral sinus; and the more recent publications of instances of the disease, by Rammel, Kolb, Taylor, Moos, Fox, and J. Orne

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* "Arch. f. Ohrenheilk.," vi, p. 219.

Green, point to the swelling over the mastoid as a very valuable diagnostic symptom.

Important differences in the symptoms are derived from the situation of the disease. The afflux of blood to the cavernous sinus takes place through the following channels: 1. The sinus spheno-parietalis, which arises on each side from a meningeal vein. 2. The vena ophthalmica superior, which, at the inner angle of the orbit, communicates with the superficial branches of the trunk of the anterior facial vein (i. e., the supra-orbital, frontal, angular, nasal, superior and inferior palpebral, and superior labial). Passing through the sphenoidal fissure, it enters the cavity of the cranium, to terminate by a dilatation (the sinus ophthalmicus) into the cavernous sinus. 3. The vena ophthalmica inferior, smaller than the superior ophthalmic vein, passes to the plexus venosus pterygoideus, and communicates with the superior ophthalmic vein only by an anastomosis.* [It is very important to remember, in connection with the subject of thrombosis of the cavernous sinus, the fact, to which Sesemann† has called attention, that the superior and inferior ophthalmic veins do not empty the largest quantity of their blood into the sinus cavernosus, but into the facial veins. Thrombosis of this sinus, therefore, can not seriously obstruct the orbital veins.] 4. The vena centralis retinæ communicates by numerous anastomoses with the superior ophthalmic vein (Sesemann, *l. c.*); but, according to Henle, it often empties directly into the cavernous sinus. [This is a point of great diagnostic value, since Sesemann's experiments would overthrow Gräfe's theory of "congestive papilla," that is, the neuro-retinitis symptomatica, in cerebral affections, in so far as they prove that thrombosis of the sinus or its compression by tumors can cause no marked congestion so long as the exit of blood into the facial vein is not prevented.] 5. The inferior anterior cerebral vein empties into the deep temporal vein and the sinus spheno-parietalis.

The efflux of blood from the sinus cavernosus takes places partly into the transverse sinus, partly into the internal jugular, and partly into the plexus vertebralis anterior, through the following channels, which pass from the posterior end of the cavernous sinus: 1. The sinus petrosus superior, which connects the cavernous with the transverse sinus (lateral sinus). 2. The sinus petrosus inferior, a considerably larger efferent channel than the superior petrosal sinus, serves as a direct communication with the internal jugular vein. 3. The plexus basilaris (of Virchow*), which consists of channels forming a rich net-work, passes from the cavernous sinus, communicates laterally with the sinus petrosus inferior, and empties inferiorly into the venous plexus of the anterior wall of the vertebral canal. The cavernous sinus has still numerous fine efferent channels, which are principally intended to establish anastomoses between the blood channels at the base of the skull and the veins of the outer surface of the latter, and the deep venous plexus of the face. They are therefore of pathological importance: 1. The cavernous sinus sends a pair of veins through the foramen ovale, which, after they have communicated with branches of the venæ meningeæ, surround the third division of the trigeminus, and terminate in the plexus pterygoideus, which is the large venous plexus of the face. This plexus communicates with the inferior ophthalmic vein, the venæ temporales, media and profunda, the plexus pharyngeus, and the sinus cavernosus, and empties its blood through the deep branches of the anterior and posterior facial veins. Occasionally the second division of the trigeminus is also accompanied through the foramen rotundum by venous branches from the cavernous sinus.

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* The anatomical description of the sinuses of the brain is taken from Henle's "Handbuch der systematischen Anatomie"—Gefässlehre.

† Emil Sesemann, "Die Orbitalvenen des Menschen u. ihr Zusammenhang mit der oberflächlichen Venen des Kopfes." "Arch. f. Anat. u. Physiol., u. wissenschaftl. Med.," 1869, p. 159.

The direction which the current of blood takes in the veins communicating with the cavernous sinus is a variable one, and will depend upon the differences occasionally existing between the general intra- and extra-cranial blood pressure. Should the blood pressure in the cranial cavity be reduced by any cause, the same collateral and anastomotic vessels which served as efferent channels during an increase of the intra-cranial blood pressure would have to suddenly change the direction of their current and become afferent vessels, because, under these circumstances, the intra-cranial blood pressure obtains the ascendancy. This change in the direction of the current is made possible by the absence of valves in the veins in question. Furthermore, in the vicinity of the cavernous sinus there is a larger quantity of loose connective tissue than exists near any other brain sinus, and, in inflammation of this sinus, this tissue may become the seat of local inflammatory œdema, which is frequently the case in the course of other inflamed veins. This œdematous swelling of the connective tissue around the veins may give rise to important symptoms of irritation.

The internal carotid artery, with the sympathetic plexus surrounding it, and the sixth nerve, pass through the cavernous sinus; close to the wall of the latter, below and outward, lies the ophthalmic nerve; the third and fourth nerves run over the upper and outer wall. It is evident that the relation of these nerves to the cavernous sinus is of much practical importance in disease of the latter, since they may be involved sympathetically, and give rise to a series of valuable diagnostic symptoms.

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* Virchow, "Untersuchungen über die Entwickelung des Schädelgrundes." Berlin, 1857, p. 48.

The anatomical changes in inflammation of the cavernous sinus and in the contiguous diseased blood channels and veins declare themselves, according to the intensity and duration of the case, in thickening of the walls of the vessel, with occasional minute abscesses in the wall of the latter. The inner surface of the sinus is deeply reddened, or else colored gray and roughened in consequence of proliferation of the epithelial lining of the sinus (Waldeyer), and covered with pus; its lumen is filled with a soft, friable, fibrinous clot, which exhibits the various degrees of purulent degeneration. When of longer duration, no clot is found; in its place, the sinus is filled with a thick, yellowish-white pus, or with an ichorous, grayish-green, offensive fluid.

Wreden was the first author to separate the symptoms of phlebitis from those of thrombosis of the cavernous sinus. He considers that the small blood channels of the base of the brain have heretofore been unjustly overlooked; and he shows that, despite their small size, their affections furnish a much more exact picture than those of the large sinus of the convexity and the lateral walls of the brain, and can, therefore, be diagnosticated more precisely than the latter.

We have referred above to the facts that the sixth nerve passes through the cavernous sinus, and that the third and fourth nerves and the ophthalmic division of the trigeminus are found on its outer wall. We can, therefore, readily anticipate the local phenomena which would be developed in consequence of pressure of the inflamed sinus upon the nerves. The affection of the third nerve would show itself by paralysis of the upper eyelid (ptosis) and divergent squint. The eye could not be rotated on its vertical axis. The affection of this nerve, furthermore, would give rise to changes in the condition of the pupil: in the beginning of the disease, when the pressure of the sinus caused irritation of the nerve, the pupil would be contracted, in consequence of irritation of the papillary fibers of the oculo-motorius. Toward the end, on the contrary, when the symptoms of irritation were obliterated by those of paralysis, the pupil would be dilated and immovable. The changes in the pupil, therefore, furnish a valuable symptom as to the degree of compression exerted by the diseased sinus upon the oculo-motorius nerve.

As inflammation of the cavernous sinus is, in the majority of cases, accompanied by meningitis, authors have heretofore attributed the phenomena of an affection of the oculo-motorius to meningitis; but Wreden describes two cases of phlebitis of the cavernous sinus (*l. c.*, cases 9 and 10, pp. 95–96), which, notwithstanding the absence of meningitis, showed familiar signs of irritation and paresis in the areas of the oculo-motorius and other cerebral nerves; and he adduces as still stronger counter-evidence a case of simple thrombosis of the cavernous sinus, which, in the absence of inflammation even in the sinus, was nevertheless accompanied by symptoms of irritation and paresis in the course of the trigeminus and oculo-motorius. Symptoms of disease in the region of distribution of the trigeminus, occurring in phlebitis of the cavernous sinus, show themselves most frequently in irritation and paresis of the ophthalmic branch; the second and third divisions of this nerve show these symptoms only exceptionally. Irritation of the ophthalmic branch gives rise to one-sided headache, sometimes sharply circumscribed, its greatest intensity being in the forehead and over the eyes (neuralgia of the supra-orbital nerve and the terminal branches of the frontal nerve).

Griesinger ("Archiv d. Heilkunde," iii, 1863, p. 446) declares that the headache is due not to the affection of the sinus, but to the concomitant meningitis; but Wreden's cases, referred to above, seem to invalidate this opinion. Fixed, one-sided, circumscribed headache is, consequently, of differential diagnostic value in an affection of the cavernous sinus, because it proves irritation (pressure upon the sinus) of a single branch of the trigeminus; while diffuse pain, spread out over the whole half of the head, speaks more in favor of the coexistence of meningitis of the median cranial fossa, whereby the second branch of the trigeminus (before its passage through the foramen ovale), or even the Gasserian ganglion, is involved. But this second division of the trigeminus may be compromised in the foramen rotundum by pressure exerted upon it by the venous branches (outlets of the cavernous sinus), which, as we have seen, surround the nerve at this point. The headache is generally accompanied by hyperæsthesia of the skin of the frontal and orbital regions (this region is also redder and warmer than that not supplied by the ophthalmic branch); lachrymation (irritation of the lachrymal nerve); photophobia (reflex irritation, or hyperæsthesia of the optic nerve). Paresis of the ophthalmic branch shows itself by anæsthesia of the skin of the forehead, eyelids, ocular conjunctiva, and mucous membrane of the forepart of the nares (nasal branch of the ophthalmic). The skin is now pale and cool. Anæsthesia of the cornea and disturbance of the accommodation of the eye have not, so far as I know, been observed. Irritation of the sixth nerve, which lies on the outer wall of the internal carotid artery in the sinus cavernosus, and is distributed to the external rectus muscle of the eye, would produce strabismus divergens; on the other hand, paresis of this nerve would give rise to an internal squint. The sixth nerve is affected earlier than the third nerve in phlebitis of the cavernous sinus, which the anatomical relations will explain.

Furthermore, phlebitis of the cavernous sinus shows itself by a congestion of the vein which empties into it, the ophthalmic, and its branches. As the result of this congestion, there is, according to Wreden, œdema of the eyelids, conjunctiva, forehead, and nasal mucous membrane, entoptic phenomena, and diminution of sight. These symptoms may in the beginning of the disease exist on one side only, but this will only be for a short time, since the disease soon spreads to the corresponding sinus of the opposite side.

We have seen that the superior and inferior ophthalmic veins do not empty the largest quantity of their blood into the sinus cavernosus, but into the facial veins; therefore, when symptoms of obstruction show themselves, viz., œdema of the eyelids, fullness of the frontal veins, exophthalmus, and impaired sight, they are to be explained not by a simple thrombosis of the sinus cavernosus, but by the presence of thrombi at the same time in the ophthalmic or facial vein.

Phlebitis of the superior longitudinal sinus is characterized by repeated and violent hæmorrhage from the nose, which Wreden considers very significant when accompanied by epileptiform convulsions. This author refers the latter symptom to capillary hæmorrhage in the cortical substance of the posterior cerebral lobes, produced by obstruction to the venous circulation of the surface of the brain.

Phlebitis of the Lateral Sinus (*Transverse Sinus of Henle*).—The phenomenon of a painful œdema of the mastoid region, which has exactly the character of a phlegmasia alba dolens (Griesinger), has now been confirmed by a very considerable number of cases by different authors,* as being diagnostic of phlebitis of the lateral sinus. This symptom, which is due to an extension of the phlebitic process to the vein leading from the lateral sinus through the foramen mastoideum to the outside of the skull—the mastoid emissary—must not be confounded with he swelling of the mastoid process accompanying disease of the mastoid cells. There are frequently also constant dizziness and a staggering gait; the former symptom obtains even in the recumbent position. The inflammation of the lateral sinus frequently extends downward to the cervical portion of the internal jugular vein, in consequence of which there will be great pain and swelling on the corresponding side of the neck. Obstruction to the circulation in the internal jugular vein shows itself by signs of congestion of the facial vein—i. e., puffiness of the face; however, this condition may last but a short time, since a collateral circulation is very soon established, the facial vein having so many anastomoses with the branches of the external jugular vein. If the inflammation extend into the finer facial branches, a distinct erysipelatous inflammation will be developed in the skin of the cheek and forehead.*

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* Schwartze, "Arch. f. Ohrenheilk.," vi, 1873, p. 219. Rammel, "Der Feldarzt," No. 25, 1876. Kolb, "Berliner klin. Woch.," 1876, p. 662. Taylor, "Med. Times and Gaz.," 1877, p. 444. Moos, "Arch. of Ophthal. and Otol.," vii, 1878, p. 465. J. Orne Green, "Am. Jour. of Otol.," i, 1879, p. 187.

There are occasionally symptoms of irritation and paresis of the vagus nerve—i. e., marked slowing or acceleration of the pulse, and significant fluctuation in the frequency of the latter. In a case recorded by Wreden, the lower maxilla, tongue, and velum palati were retarded in their movements; there was also loss of voice, and inability to cough, clear the throat, or swallow; the diaphragmatic respiratory movements finally became short and very superficial. There was, therefore, in this case, really a paresis of the vagus, the spinal accessory, and the hypoglossus; the sense of taste was not examined, hence it is not known whether there was paresis of the glosso-pharyngeal nerve. The paresis of the nerves which pass out of the cranial cavity by the jugular foramen (vagus, spinal accessory, and hypoglossal), may be explained by the extension of the inflammation of the lateral sinus to the upper dilated portion of the internal jugular vein. The nerves are pressed upon partly by the inflammatory infiltration in its vicinity.

The symptoms developed in consequence of the extension of the phlebitic process to the emissary vein—emissaria mastoidea [which emerge from the skull just behind the mastoid process, and furnish a direct venous connection of considerable size between the lateral sinus within the skull and the occipital veins of the surface]; emissarium condyloideum [which passes through the condyloid canal, and connects the plexus vertebralis cervicalis with the lower end of the lateral sinus]; emissarium parietale [which extends through the foramen parietale, connecting the veins of the scalp with the sinus sagittalis sup]; and emissarium occipitale [which emerges from the opening in the occipital protuberance, and furnishes a fine and tortuous communication between the occipital veins and the lateral sinus near the torcular Herophili]—will show themselves by swelling and tenderness in this course.

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* Wreden, "Arch. of Ophthal. and Otol.," v.

Phlebitis of the superior petrosal sinus, although producing no very characteristic symptoms, would give rise to great congestion in the labyrinth of the ear, with subjective noises and deafness, which is explained by the fact that the veins of the labyrinth terminate in this sinus.

In order to avoid confounding sinus phlebitis with sinus thrombosis, we should bear in mind the cause of the two diseases. Simple thrombosis of a brain sinus from ear disease is very rare; it usually depends on a marantic condition. It is not usually preceded by any suppuration in the vicinity of the pericranium; however, should this be the case, the thrombus almost always undergoes softening, and the thrombosis passes into phlebitis of the sinus.* Phlebitis of a sinus, on the contrary, occurs in suppuration in the vicinity of the pericranium. Thrombosis is not accompanied by fever, unless the latter depends upon the disease producing the thrombosis. In phlebitis, there is almost always a marked febrile movement. Simple thrombosis is unaccompanied by pyæmic symptoms, while they are the rule in phlebitis. Indeed, accurate thermometric observations of patients suffering from affections of the ear are of the greatest value. In Wreden's case of phlebitis of the cavernous sinus, the initial or pyogenetic stage was very short. On the first day, the temperature rose rapidly and without remission to a morning temperature of 39° C. [102·2° F.], and gained in a few hours the maximum of 39·9° C. [103·82° F.]. Such a sudden rise of temperature, to a height of 39°–40° C., and more, immediately on the first day, Wreden considers particularly characteristic of the beginning of the fever of an encephalic complication in purulent ear affections. Another valuable point in the differential diagnosis of the initial period of the fever of encephalic complication, in inflammation of the ear, is that it rarely begins with a chill, even when, as Wreden observed in one case, the temperature was 40·1° C. [104·18° F.]; whereas in the fever of phlebitis of the cerebral sinuses and meningitis diffusa, usually, if not always, the reverse is the case.

Although phlebitis of a brain sinus is not absolutely fatal—since authentic cases of recovery from phlebitis of the lateral and superior longitudinal sinuses are known to literature (the inflammation may lead to obliteration of the affected sinus, and obliteration of a brain sinus is not incompatible with life), nevertheless, the prognosis in this disease is always unfavorable.

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* Heineke, Pitha u. Billroth's "Handb. d. Chir.," iii, A, 1, p. 102.

Now it will be asked, What is the remedy for the grave diseases which we have been considering? How is the fatal result to be guarded against? The answer is that, as the diseases in question are irremediable in themselves, as they are secondary to and the direct result of other diseases, the primary disease, for which proper attention and treatment at the right time are almost always effectual, requires our most earnest consideration.

PERMANENT PICTURES ON THE RETINA.

By W. C. AYRES, M. D.

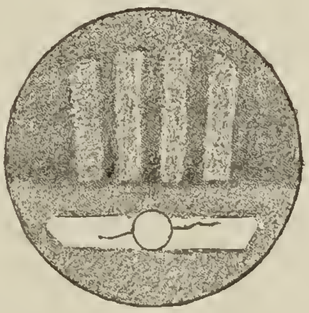
Immediately after the discovery of the visual purple by Professor Boll, and the ascertainment of the fact that it is possible to produce pictures on the retina which can be examined after the death of the animal, the question was discussed as to whether these pictures could be made use of by the legal profession in cases of murder, etc. I have frequently been asked such questions, and I have therefore concluded to write this article, and to give as much of the photo-chemistry of the retina as will suffice to answer this particular question.

In order to produce an "optogramme" in the eye of a living animal, the only requisite is that a distinct image be thrown on the retina by the dioptric system of the eye. This is always the case when the eye is turned toward the object, and the system is properly accommodated for the particular distance between the object and the retina. In order that it should remain there with an intensity sufficient for after-inspection, we must, first, have a certain quantity of visual purple in the rods; and, secondly, the image must remain a certain length of time *in situ*. This length of time has been determined by experiment. Again, in order to get at the image so as to examine it, there is a variety of circumstances which must be rigidly observed; and, since the subject of retinal optography is so delicate, I will take the liberty of giving a certain number of minutiæ which will be of value to those who wish to experiment in this particular branch of physiology.

The most convenient eye is that of the rabbit, as I can testify from a series of more than a thousand experiments made by myself in Professor Kühne's laboratory, in Heidelberg—first, from the fact that the animal is easy to obtain; and, secondly, because he is so accommodating as to lie still for a long enough time for the production of an optogramme on his retina; and, thirdly, he does not bite. The most convenient apparatus will be a common wooden box, painted black inside, the box to have a glass top, with a series of black stripes, about an inch wide and an inch apart, painted on the glass. If atropine be put into the eye, the proper distance for the stripes from the retina will be about twenty-five ctm. Now put the rabbit into a perfectly dark room, like the ordinary ophthalmoscopic room of an oculist, and let him remain there for a sufficient length of time for the visual purple to form in great quantities—say one hour. No actinic light must be admitted to his eyes, and therefore, in order that we may have enough light to operate by, we must arrange a sodium flame in the room, since this will allow us to see, while at the same time it has so little chemical activity that it will have no effect on the visual purple. The most convenient form of sodium flame is made by taking a piece of platinum wire and bending it into the shape of a small hook at its end; heat it, and dip it while hot into carbonate of sodium. The latter will adhere to it. Now fuse the carbonate that sticks to the wire in the same flame, and repeat this until you have a "sodium pearl" about a line in diameter. Now obtain a Bunsen's burner, which burns with but little light, and place the sodium pearl in its non-luminous flame. The result will be a pale-yellow light, sufficiently bright to allow us to arrange matters in the room, while at the same time it has the minimum of actinic power. Place the box of which we have already spoken out of doors, so that the light may come from above and shine through the spaces between the black stripes we have painted on the top. The surest way to get an optogramme will be to cut off the rabbit's head in the dark room, and cover it up with a black cloth. Bring it to the box and place it with the eye just in the middle, the optical axis being pointed upward. The shortest time of exposure which will produce an optogramme has been found to be one quarter of a minute, and during this time the eye must remain perfectly still. If the pupil is small, this will not be long enough, so let it remain for three minutes. Turn the head over *rapidly*, and expose the other eye for the same length of time, taking care that no light be admitted to the eye which has been first exposed. An optogramme will certainly be produced in each eye. Carry the head back to the dark room, remove the eyes from the head, amputate the anterior hemisphere of each, put the retinal halves into a four-per-cent. solution of common alum, and let them remain there for five or six hours (of course in the dark).

These operations we must have done under the sodium light. The effect of the alum will be to harden the retina, and also to detach it from its pigment epithelium. Procure a shallow dish and fill it with water, put the half eyes into it, and do the remainder under water. Now take a small punch and punch out the papilla, so as to detach the retina from the optic nerve. Seize the retina with a pair of forceps, and gently extract it from the bottom of the eye. We then have the retina floating in the water, with the optogramme on it. Of course, you can not remove the delicate retina from the water without destroying it, since it will tear by its own weight. Float it on to some small round solid body, like a marble, of just the size of the posterior part of the eye, and remove the retina, marble and all, at the same time.

So far we must have been working in the sodium light. Now bring the retina *into the daylight*, and we shall find a most beautiful picture of the stripes on the top of the box. Where the light has been transmitted through the glass, or between the dark stripes, the retina will have been deprived of its visual purple; and also, where the dark stripes have cut off the light, the purple will be intact—therefore, an exact optogramme will have been produced. The accompanying figure shows a picture on the retina (rose-colored in the original) which has been made in this way.



The methods of procedure in the living animal are the same, except that the eye is exposed in its natural conditions, and not in the head after it has been cut off. Of course, the great difficulty is then to keep the animal still; but this is readily done by using the "Leipsic holder," and putting a speculum into the eye. If the animal is very troublesome, we can give him curare, do tracheotomy, and set up artificial respiration with a pair of bellows. Nevertheless, the principle is the same.

We have found that, as long as the eye remains in the head of the living animal, "rhodogenesis" will go on, and after a certain time the optogramme will be obliterated; but if the animal be killed immediately, the image will remain there until after putrefaction has set in. Since the visual purple is an albuminoid compound, it will decompose, and its color will be destroyed; but this would not be an insurmountable obstacle in the detection of a murderer by the optogramme on the retina of the victim. But what are the other requisites for the *formation* and *fixation* of such a picture on the retina? Above all things, the retina must have been previously under such circumstances as to have allowed the visual purple to accumulate in considerable quantities, or otherwise the shades of difference in color of the background of the eye, produced by the action of the light reflected from the brighter parts of the objects, would not be great enough to render an image recognizable. And, furthermore, the eye must have remained *stationary* for at least one quarter of a minute, both as to its locality in space and as to its accommodating apparatus. If both of these last conditions are not complied with, the image on the retina will be blurred, and consequently the optogramme will also be indistinct. Then, again, if the eye is not placed in the dark immediately after the optogramme is perfectly formed, and the animal killed, it will be destroyed by the bleaching action of the light on the remainder of the purple which makes up the darker parts of the picture. Then, the retina must be examined before putrefaction sets in. If the optogramme is once well formed in the eye, it will remain there after death. If it be on the retina after we have removed it from the head by the process just related, it can be fixed there so that it will not bleach out, as I have found, by washing it in a five-per-cent. solution of carbolic acid. It could also be photographed.

While I was working in the laboratory in Heidelberg, Professor Kühne proposed to me to make a picture of Helmholtz on the retina of an animal, and send it to him, and thereby acknowledge the enormous advances his genius had made for us in physiological optics. In order to have the very best chances of a successful experiment, I caused a large "negative" of Helmholtz to be made, and set about making an optogramme from it, according to the most approved methods, and with the most convenient apparatus. The negative was placed over the eye, which had been dosed with atropine. The animal was in the dark room for hours. In order to do away with any such accidents as a moving of the eye by the animal, I gave him curare, put in a tracheotomy tube, and caused a servant to keep up artificial respiration. The sun was shining brightly, so that I had the best of light, and, every precaution having been taken, I exposed the retina for four minutes. I could see a dull picture on the cornea, and when I examined the retina I had the intense satisfaction of seeing an image of Helmholtz's shirt collar and the end of his nose. I did not send it to him. The light was not bright enough, or rather there was not enough transmitted through the negative to bleach the visual purple.

We know also that there is always an active rhodogenesis in the living retina, and it might have been strong enough to restore the visual purple as fast as it was bleached, as there was not much light passing through the negative. I therefore cut off the head of a rabbit, and waited until all such power on the part of the retina was certainly done away with, and tried the same experiment (omitting the artificial respiration, since I only needed the head), and the result was a little better than the preceding, but the optogramme was by no means sufficiently distinct for one to recognize even that it was intended for a picture. We therefore came to the conclusion that such an optogramme was impossible, and gave up the plan. I will also add that, since the above-described experiment failed so signally, it is utterly idle to look for the picture of a man's face, or of the surroundings, on the retina of a person who has met with a sudden death, even under the most favorable circumstances.

WHAT ATLANTIC CITY CAN DO FOR CONSUMPTIVES.

By BOARDMAN REED, M. D.,
ATLANTIC CITY, N. J.

Dr. Kenworthy, of Florida, recently contributed to the "New York Medical Journal" an extended paper concerning the effects of various climates upon pulmonary consumption. It was written in answer to a previous article by Dr. Jones, of Minnesota, embodying a plea for cold climates as winter resorts for phthisical patients. Each of these gentlemen says much in favor of his own locality and something in opposition to the locality of the other. It is not impossible that both are right, and that both Minnesota and Florida have objectionable features, as well as many notable advantages.

Consumption arises everywhere on the globe (except, it is said, in Iceland and certain other arctic regions), and, to whatever climate its victims resort, the majority of them die. No place yet discovered is a perfect sanitarium for these afflicted ones, inasmuch as there is none where they can be sure of recovering, even with the help of cod-liver oil, the hypophosphites, and all the vast resources of the modern medical armamentarium.

It might seem at first blush a little ridiculous that partisans of the coldest and of perhaps the warmest region in the United States should be engaged in an earnest dispute as to the relative advantages of their respective climates for the cure of phthisis; but the very highest authorities differ widely concerning nearly every one of the desiderata in the climatic treatment of that disease. Some recommend cold climates; others warm. Some advocate high altitudes, such as are found on mountains or elevated plateaus; others, and at present apparently the majority, favor the seashore, as likely to combine the greatest number of advantages.

Professor Hughes Bennett, of Edinburgh, who has written much on phthisis, says: "For winter, the best climate for the consumptive invalid in this country [Great Britain] is the south coast, extending from Hastings on the east to Penzance on the west side." He gives the preference, however, to another seaside climate, the northern shore of the Mediterranean, between Cannes and Pisa—a climate which certain other writers condemn very strongly, because of the violent and sudden changes of weather there, and the cold, raw winds frequently blowing off the mountains.

Dr. Madden, in his "Health Resorts of Europe and Africa," says (page 6): "With few exceptions, the localities resorted to in winter by consumptive patients are situated on the sea; and certainly this predilection is well founded, for such situations are more equable in temperature, being cooler in summer and warmer in winter, and less subject to sudden transitions or great extremes of temperature than inland places. As a general rule, therefore, I would select a locality on the seashore for the residence of consumptive patients." Indeed, it is becoming a generally accepted opinion, that the seashore offers paramount advantages as a residence for patients afflicted with pulmonary disease; yet it is commonly held that, the drier the locality selected upon the shore, the better for most cases, notwithstanding the statistics by which at least one author strives to prove that wetness of soil and atmosphere is rather beneficial than otherwise.

We can only infer from this diversity of views—what, indeed, pathology now teaches—that pulmonary consumption is really a disease of various types, and that the climate which proves useful in one type or phase may fail in others. Perhaps the best advice is that given by Professor A. L. Loomis, who, as quoted by Napheys, lays down these two general rules: (1) In whatever locality a phthisical patient finds himself improving, he should remain there; (2) whenever he finds his health deteriorating in a locality, he should leave it.

It does not seem necessary, therefore, to decide in favor of either Florida or Minnesota—the extreme south or extreme north—as the only proper residence for such patients in the winter season. Professor Bennett, in his work on "Pulmonary Consumption," expresses a sentiment on this point, which, though Dr. Kenworthy has quoted it, appears scarcely to help his case. It is this: "Now that medical doctrines have changed, that vitalistic and sthenic views of treatment prevail, and are found to give infinitely more satisfactory results than those that followed antiphlogistic treatment, the medical mind in America and Europe looks about for a colder climate. As usual, the pendulum has a tendency to pass to the other extreme; to go from Madeira, Jamaica, and Barbadoes, from Havana, Florida, and Nassau, to the ice-covered summits of the Swiss mountains, to the frozen plains of Northern America. Many minds can never constitutionally accept and follow the golden adage, '*Medio tutissimus ibis*'; they can not remain in the middle of the road; they must pass from one extreme to the other."

Evidently Professor Bennett considers Florida and Minnesota as extremes, and would give the preference to some middle region. Atlantic City, N. J., situated in latitude 39° 22′, is just about midway between the peninsula of Florida and the "frozen plains of Northern America," and may therefore claim to be the "golden mean." It is rapidly growing in favor as a winter resort for many classes of invalids. It has one of the driest and most equable climates on the coast, has better hotel accommodations than can be found in either Florida or Minnesota, and is so accessible to the New England and Middle States that a trip hither is neither a serious undertaking nor a finality involving a complete cutting adrift from home, friends, and family physician, with the prospect of dying among strangers if the climate should not suit.

There are many patients who are drifting into phthisis as the result of a general break-down following excessive devotion to business or pleasure. These may not care, and do not need, to expatriate themselves for half the year. They may often do perfectly well at home, provided they avoid all excesses and have the best possible medical treatment; but, their vital forces being at a low ebb, they need occasionally the stimulus to be derived from a few weeks' sojourn in some invigorating seaside climate, where it is not so cold as to keep them in-doors, and yet not so warm as to relax their tissues and still further debilitate them. It is this class of phthisical cases, and numerous other affections resulting from nervous exhaustion, that we see most of here, and find to receive the greatest benefit from the climate.

Dr. Jones, it seems to me, has the preponderance of authority with him in advocating cold climates as more favorable to phthisis than hot ones. Dr. Parkin, in his "Climate and Phthisis" (London, 1875), which contains a very full discussion of this subject, contends, and apparently proves by abundant statistics, that neither cold nor moisture is a cause of consumption, and thus tersely sums up the results of his investigations: "We may say, in fact, that every degree of latitude southward that a consumptive patient traverses is simply putting another nail in his coffin" (p. 79).

The only possible excuse for sending phthisical patients to a milder climate in winter is, to permit them to spend more time in the open air. But if they go to the far South, where frosts are rarely known, they miss altogether the invigorating effect of freezing weather. After passing through a hot summer in the North, they experience another warm season in the South, with all its enervating influences, to say nothing of the malaria which may be said to be endemic there at all seasons.

At Atlantic City there is enough freezing weather to clarify the air, even if the antiseptic vapors proceeding from the salt water, which surrounds the town on every side, did not insure the destruction of any disease germs; yet during the daytime it is rarely so cold that a well-wrapped invalid may not safely enjoy a walk or drive along the firm, smooth beach, or over the dry streets of the town. There are occasional days, of course, when either rain or sharp north winds may confine him to his room, or, at least, to the verandas on the south side of his hotel. But, practically, the consumptive who is able to go about at all can obtain during a winter's sojourn here an abundance of out-door exercise and sunshine, in an atmosphere which is perfectly pure, stimulating, and exceptionally dry for a seaside place.

In proof of its unusual dryness, I can only cite the almost universal testimony of visitors, that it is the driest locality they have known upon the seacoast, as judged by their subjective sensations and the effects upon starched clothes, shoe-leather, etc., and point to the reports of the Chief Signal Officer for the years 1878 and 1879, which show that the amount of rainfall at Atlantic City is less than at any other station on the Atlantic coast. There are no records, unfortunately, of the relative humidity in those parts of the town occupied by the principal hotels and boarding-houses; and the United States signal station has been for years located so near the beach at its most exposed point, near Absecom Inlet, that the instruments there are affected by humid influences not felt at all in other parts of the island.

During the winter months the thermometer usually ranges from three to twenty or thirty degrees above the freezing-point during the middle and after parts of the day, except when the so-called polar waves, which sweep down from Canada or the lake region across the whole United States, chance to come this way. But these cold waves, when they reach Atlantic City at all, are much modified in their passage, and are nothing like so severe here as at points farther north.

In fact, the town is so situated that the severest storms from the north and west do not strike it with their full force. At Barnegat, the next station on the coast above, and at Cape May, the next below, there are much higher winds. Sergeant McGann, the observer at the signal station here, furnishes the following official figures: Total movement of wind during the year 1879: Atlantic City, 84,117 miles; Barnegat, 109,059 miles; Cape May, 135,883 miles; excess at Barnegat over Atlantic City, 24,942 miles; excess at Cape May over Atlantic City, 51,766 miles. There being 8,760 hours in a year of 365 days, the average velocity of the wind at Atlantic City is found to be about nine and a half miles an hour, taking the whole year through, while at Barnegat it is nearly twelve and a half miles, and at Cape May fifteen and a half miles an hour, on an average. This extraordinary immunity of Atlantic City from high winds, as compared with places so near it, shows that it must be in some manner sheltered.

Through the courtesy of Sergeant E. B. Garriott, the observer in charge of the signal station in New York, some statistics of the weather in that city during the three spring months of the year 1880 have been obtained, and in the following table are compared with the corresponding figures for Atlantic City, furnished by the observer here:

	Mean Temperature.	Rainfall in Inches.	Mean Barometer.
March, 1880.			
New York city..........	34·0	4·66	30·065
Atlantic City............	40·1	5·97	30·061
April, 1880.			
New York city..........	49·0	3·38	30·015
Atlantic City............	49·3	1·83	30·045
May, 1880.			
New York city..........	65·5	0·82	30·059
Atlantic City............	63·1	0·54	30·088

From this table it will be seen that the temperature during March averaged six degrees higher here than in New York city; in April it was only slightly higher; and in May, when New York began to experience its foretaste of the summer heats, it averaged cooler in Atlantic City. The rainfall was less here in

April and May, though a little greater during March, than in New York.

During the entire year ended June 30, 1879, the amount of rainfall in New York was 43·68 inches, as against only 40·6 inches at Atlantic City. Taking a series of years, the rainfall in New York city is found to average only a little more than at Atlantic City, though greatly *less* than at most seaside stations. For instance, during the two years ended June 30, 1879, there were 135·02 inches of rainfall at Wilmington, N. C., 108·04 inches at Newport, R. I., 103·73 inches at Jacksonville, Fla., 86·36 inches at New York, and only 83·5 inches at Atlantic City.

The proximity and course of the Gulf Stream in this vicinity exercise an important influence upon the climate of Atlantic City, but this is a subject which I have recently discussed quite fully elsewhere.

If it were desirable to prolong this article, I could cite numerous cases of consumption which have been markedly benefited by a winter's residence here. I can recall several persons who came here a few years ago with chronic cough and evidences of consolidation in part of one lung, and, having experienced decided improvement, have remained ever since, winter and summer. The disease in these cases seems to be arrested. The majority of such patients here are from Philadelphia and Pennsylvania, but within the last two or three years I have seen many consumptives from New York, as well as from Boston and other cities of New England. Some who came in the last stage found no benefit, but nearly all who have come while the disease was yet in an early stage, or, if further progressed, was pursuing a slow and chronic course, gained, at least for a time.

One notable case is that of a New York merchant who spent last winter here. After having had several hæmorrhages and become considerably emaciated, he came here early in November, with instructions from his physicians to proceed farther south as soon as the weather grew too cold for him. He remained all winter, walking out almost daily, and returned to New York in the spring to resume his business, greatly improved in health.

Atlantic City offers, then, as its chief advantages for winter residence, a pleasant and highly remedial climate and great accessibility. Three railroads connect the place with Philadelphia. Trains leaving Jersey City about 1 P. M. reach here between 5 and 6 P. M., and through cars will shortly be run over at least one of the roads the entire distance. But a place where invalids accustomed to the usual comforts, luxuries, and social enjoyments of civilization are expected to reside for months at a time, must possess other attractions besides a good climate and accessibility, else *ennui* and homesickness would soon more than counteract the exhilarating effects of the air, and then the more numerous the railroads, the quicker an escape would be made.

Atlantic City is now one of the largest of the distinctively seaside towns in the United States, having a permanent population of six thousand. It has church services conducted all the year, according to the Episcopal, Catholic, Presbyterian, Methodist, and Baptist forms of worship, with the usual social organizations of these different denominations. The place also boasts of street railways, omnibus lines, and no lack of carriages and phaetons for hire at all seasons; good fishing and shooting; circulating libraries; hot and cold sea-water baths; and, finally, excellent hotels, at some of which, during the latter part of winter, there is to be found as choice and brilliant a society as at the height of the summer season.

SEPTIC POISONING IN AN INFANT.

By J. FOSTER BUSH, M. D. (Harv.),
BOSTON.

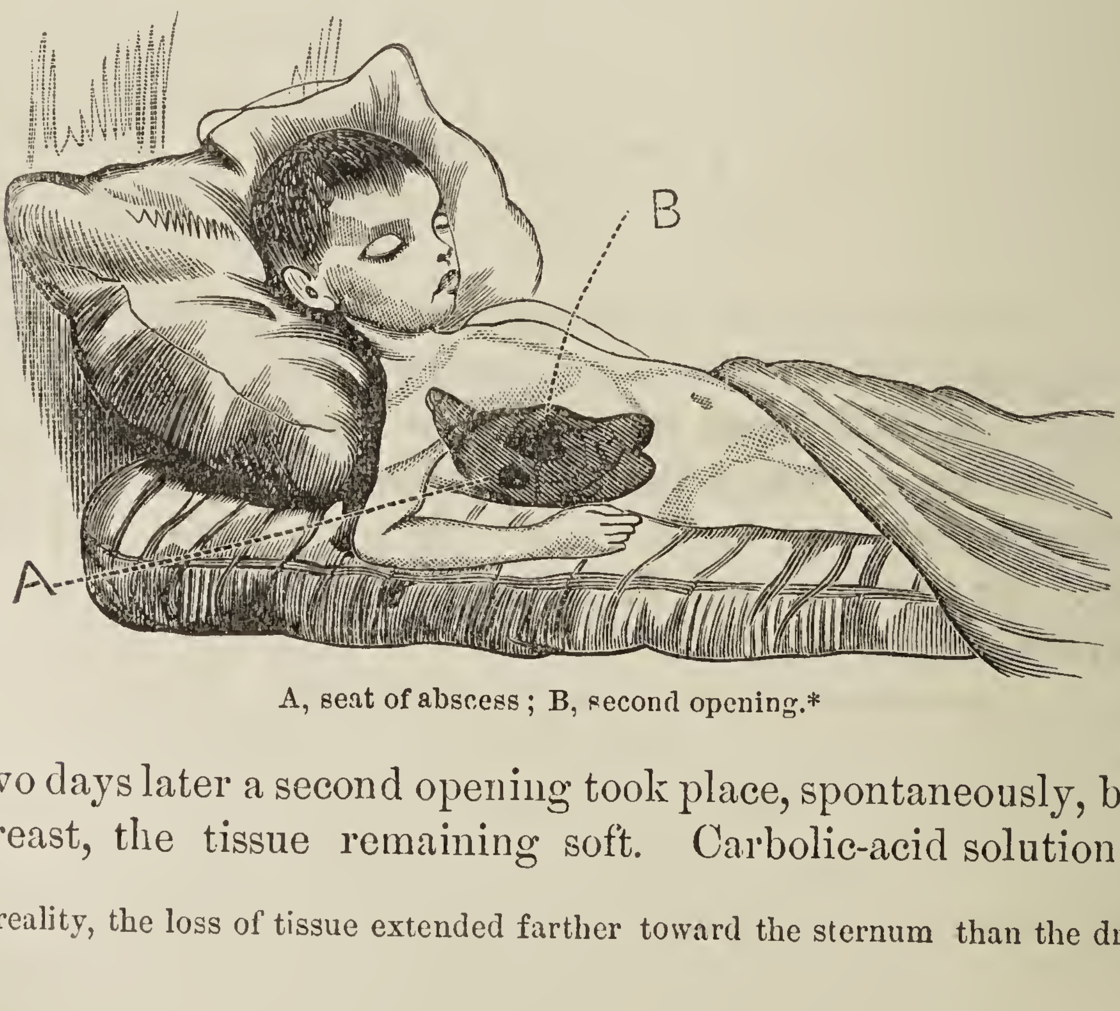
Mrs. S., aged twenty-four, a primipara, was delivered, after an easy labor, of a male infant weighing nine pounds. The mother's convalescence was rapid. The milk came freely, and without any febrile disturbance. She kept to her bed for nine days, more on account of respect for a popular idea than from necessity, and on the tenth day got up, experiencing no pains nor aches, and seeming better for the liberty.

The child was perfectly formed and well nourished. On the fifth day, the umbilical cord had nearly separated from the body. Two days later it dropped off, leaving a healthy, granulating surface. The day on which the cord began to separate, the child's breasts were hard and swollen, and a thin fluid exuded from the nipples. As this is a common occurrence, no special attention was given to the parts, an application of sweet-oil being all that was considered necessary. Two days later the induration of the left breast subsided, while the right continued in the same condition spoken of above. I did not see the child till five days later—twelve after the confinement—at which time the condition of things had greatly changed. The whole right side of the breast, from the clavicle above to the lower border of the ribs below, and from the middle of the sternum to a line drawn from the middle of the axilla to the crest of the ilium, was hot, swollen, indurated, and of a dusky red hue. Just behind and on a line with the nipple was a fluctuating mass, which seemed to be distinct from the surrounding induration. This condition was accompanied with greenish, watery dejections, restlessness, and increased temperature.

Dr. W. L. Richardson saw the case in consultation. It was decided to make a free exit for the pus from the abscess, and, as there was nothing but thin integument over the ribs, not to make any other incisions. The contents of the abscess proved to be sero-sanguineous, with broken-down tissue; and, by pressure from the nipple backward, the same kind of liquid was made to escape. This did not occur when pressure was exerted in any other direction. Upon passing a finger into the incision, the parts did not seem to be dissected up, save in the direction above spoken of.

The quantity of fluid evacuated was estimated at about an ounce. The abscess was well washed out with a one-to-forty solution of carbolic acid; a poultice was applied to the part, and a powder of oxide of zinc and starch was dusted on the surrounding inflamed tissue.

The next day the integument was much softened; the discharge from the abscess was free, offensive, and of a thick, reddish character. The child nursed well, the diarrhœa continuing at intervals, and slept fairly; but, when awake, kept up a continual moan.



A, seat of abscess; B, second opening.*

Two days later a second opening took place, spontaneously, below the breast, the tissue remaining soft. Carbolic-acid solution was used freely, and for two days the child seemed to be doing nicely; but soon the edges of the openings became undermined; a red line with a grayish border formed, which gradually and steadily extended, and the whole space before alluded to soon became an open ulcer, the progress of the gangrenous process not being affected by any of the applications that were used, among which were carbolic oil, nitrate of silver, muriatic-acid wash, persulphate of iron, tincture of iodine, and charcoal, to say nothing of various kinds of poultices. The gangrenous condition was not confined to the integuments, for as fast as the ribs were uncovered they were thrown off in pieces, so that at the time of death, which took place when the child was ten weeks old, the area above alluded to opened upon the costal pleura, which was covered by a yellowish exudation, diphtheritic in character.

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* In reality, the loss of tissue extended farther toward the sternum than the drawing shows.

During this time—ten weeks—there were alternations of prostration and apparent recuperation. The diarrhœa was not constant, though it was a prominent symptom throughout; there was sweating, and once there was something like a rigor. The urine was occasionally of a dark, smoky color.

In 1873 there was an epidemic of septic poisoning in the Boston Lying-in Hospital, ten children being attacked, of which number only two recovered. These cases were investigated by Dr. W. S. Bigelow, at present Assistant in Surgical Pathology in Harvard Medical College, and the results of his labors were published in the "Boston Medical and Surgical Journal" of March 11, 1875. The symptoms, as stated by him, were: "1. Deep discoloration of the skin. 2. Hæmaturia. 3. Diphtheritic inflammation of some of the mucous surfaces in every case but one, where a thrombo-phlebitis of the umbilical vein existed. 4. Dark greenish dejections."

Upon comparing these symptoms with those in our case, we find they are of the same general character and due to the same condition.

Dr. Bigelow made several hundred microscopical examinations, and found: "1. An alteration of the blood, consisting in (*a*) excess of white corpuscles, (*b*) alteration of the red corpuscles, (*c*) the existence of granules. 2. Accumulation of the amorphous material of the red corpuscles in the renal tubules, with clots in some cases in the ureters and bladder. 3. Accumulation of spores (*a*) in the renal tubules, with extension outside their walls. . . ."

It is to be regretted that no autopsy could be obtained in my case, so that a comparison could have been made with the results observed by Dr. Bigelow. From the fact that inflammation of the breast often occurs when separation of the umbilical cord takes place, I think it safe to infer that this was the mode of infection. As to internal treatment: brandy was used from the first; breast-milk was the only nourishment; tincture of chloride of iron in one-drop doses often; chalk and Dover's powder for the diarrhœa.

It is an open question if it would not have been better to incise the integument freely, as would have been done in cellulitis of the arm or leg. The only reasons for not doing this were the thinness of the skin and the youth and feebleness of the subject. It is doubtful if the softening of the parts would have taken place as it did, if the sloughing had been caused by lack of free incisions.

As an interesting fact concerning the communication of septic diseases in the puerperal state, I would say that the mother's convalescence was not interrupted, and that the child's grandmother, a midwife, spent her time alternately in attending to the child and in following her avocation, and that, as far as I could ascertain, no harm resulted. If a physician should do this, what would the professional verdict be?

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Editorials.

PANACEAS IN EDUCATIONAL PROGRESS.

No one can doubt that material advances have been made in this country during the past decade in the matter of teaching medicine. Except for the tempering influence of experience, the recent graduate has a far better knowledge of medicine than the old practitioners whose rival he is to become. This superiority is by no means to be explained by saying that the science and art of medicine have advanced, and that therefore what he has been taught is the same that they were taught, plus the increase of our knowledge since their time. That counts for something, no doubt; but the great lever in the hands of the young graduate is that he has learned, in far greater measure than his elders were ever enabled to learn, how to continue the study of medicine to the best advantage. Whoever is able to do that, will sooner or later find himself among the foremost. The medical student of the present day profits not so much by the actual facts that are given him to memorize as by the demonstrations, over and over again repeated, of the processes by which those facts are arrived at, and by which he himself must seek to add to his outfit in the way of knowledge.

Now, to what do we owe this progress, and to what means are we to look to enable us to make further advances in the same direction? Not, certainly, to any one of the specific measures that have been so lustily cried up since it became the fashion to make a stir about the matter. One man pins his faith to endowed colleges, another looks upon the "graded course" as all-sufficient, a third sees our only safety in preliminary examinations, a fourth yearns for a State examination to set things right. That is to say, those who, in a sentimental sort of way, desire progress provided it can come without work or thought on their own part, but who have too little interest in the matter to really study the problems involved, grasp at the first panacea that happens to attract their attention, and urge it in season and out of season.

Whatever advantages an endowment may enable a particular college to hold out, contribute to the excellence not only of that one institution, but of its competitors also, for they must display an equivalent or go to the wall. Our faculties understand this situation thoroughly, and being, as a general thing, largely made up of shrewd men, they may safely be trusted to act accordingly. For its own interest, if for no other motive, every college will do its best.

Taking this view of the matter, we are not inclined to show sorrow at the reported action of the Bellevue Hospital Medical College in discontinuing its preliminary examination, although we do regret that a material falling off in the patronage of the college constituted the reason for such action. We will take occasion to say, too, that, had the other large colleges acted in concert with Bellevue in this matter, her steps need not have been retraced. Those young men who enter upon the study of medicine soon learn the difference between the value of a thorough and that of an inadequate course of instruction. To state the case more pointedly, they find that it is only in the large cities that they can get such instruction as will enable them to compete successfully with their rivals. The great majority of them are ambitious, and will have such instruction at any price. Hence, we say again, the colleges of the three cities of Boston, Philadelphia, and New York could, by concerted action, enforce the preliminary examination, or any similar measure, without losing their patronage.

In instituting such a requirement, Bellevue took a step that should relieve her of any share in the obstructiveness sometimes imputed to the colleges; and now, in abolishing it, she has shown her full recognition of the business principles that govern these institutions, and, in our opinion, ought to govern them. Mean-time, let the sentimentalists stop croaking, and set themselves at work to rear a brood of students that will not quail at so simple a requirement as this preliminary examination really amounted to.

Special Articles.

THE SO-CALLED THIRD SPHINCTER OF THE RECTUM.*

By CHARLES B. KELSEY, M. D.,
SURGEON TO THE INFIRMARY FOR DISEASES OF THE RECTUM, ETC.

It is now about half a century since Nélaton first described the third sphincter muscle, and, in spite of all that has been written concerning it since that time, it is hardly more than a year since Van Buren † summed up the general knowledge of anatomists and surgeons in regard to it, by characterizing it as an organ to which anatomy and physiology had been equally unsuccessful in assigning either certainty of location or certainty of function. For the original description of the muscle by Nélaton we are indebted to Velpeau, who writes that he has verified the existence of a sort of sphincter of the rectum, lately discovered by Nélaton, and goes on to say that it is a muscular ring situated about four inches above the anus, just in the place where retractions of the rectum are most often found. If, after turning the rectum so that its mucous surface is external, it is moderately distended by insufflation, the muscle will be seen to be made up of fibers collected into bundles. Its breadth is from six to seven lines in front, and about an inch behind. Its thickness, on the contrary, is much greater in front, where the fibers appear to be collected in the angle which corresponds to the union of the first and second curves of the rectum, while behind they are scattered over its convexity. After thus adopting the description of Nélaton, Velpeau brings out one other anatomical point—the attachment of the muscle posteriorly to the front of the sacrum. The functions ascribed to the muscle by Nélaton were those of keeping the rectum empty until a short time before the act of defecation; of separating the fæcal mass and preventing its regurgitation during defecation; and of opposing the continuous and involuntary escape of fæces after destruction of the lower sphincters.

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Foster.—" Text Book of Physiology," Philadelphia, 1880, p. 387.

† " On Phantom Stricture," etc., " Am. Jour. of the Med. Sci.," Oct., 1879.

Hyrtl refers to this description, and himself describes the muscle as being six or seven lines in breadth anteriorly and an inch posteriorly, but does not always find it present. He also in one case demonstrated the attachment to the sacrum. Sappey admits its frequent existence, and locates it at the level of the base of the prostate, in the middle portion of the rectum, six, seven, eight, or sometimes nine centimetres from the anus. It never completely surrounds the rectum, but only one half or two thirds of its circumference; and it appears to him to be caused by a grouping of the circular muscular fibers, some being gathered from below upward, and others from above downward, to the same point. Its breadth is one centimetre, and its thickness two or three millimetres. Situated sometimes in front, sometimes behind, and again laterally or antero-laterally, it is constant in nothing except its direction perpendicular to the axis of the bowel. In place of one, he has sometimes found two bands at opposite points and different levels, and in one specimen which he has preserved there were three. Henle adopts Sappey's description in the main. Pétrequin found the muscle irregularly oblique, less marked in the front wall than in the back, and consisting of a collection of weak bands of fibers. Chadwick asserts that no distinct muscle exists, but describes in place of it two agglomerations of the circular muscular fibers, one on the anterior and one on the posterior wall, corresponding to two semicircular constrictions which may be felt by digital examination, and whose effect is to give the rectum its sigmoid curve.

The third sphincter muscle and the valves of mucous membrane in the rectum are not, as might be supposed, one and the same thing, though it is true that they have become almost hopelessly confounded in surgical and anatomical literature, and are often spoken of as identical. As far as possible, we shall try to consider them separately, without doing violence to the text of the authorities. The valves of the rectum (we use the word simply as expressing the folds of mucous membrane) were first described by Houston at about the same time that Nélaton described the superior sphincter; and it is worth remembering that the two authors were writing about two entirely different things, and two things which stood in no necessary relation to each other, so far as we may judge from their descriptions. Houston's method of preparation was by filling and distending the gut with spirit before its removal from the body, and then laying it open longitudinally. He states that the folds disappear if the bowel is first removed from its natural position and then distended, but that they may be seen in the natural condition of the parts soon after death, before the tonic contraction has disappeared; and that they are then found to overlap each other so effectually as to require considerable manœuvering in order to pass a bougie or the finger along the bowel. It is also remarked that this is just the arrangement necessary to prevent the fæces from urging their way toward the anus, where their presence would excite a constant sensation demanding their discharge.

According to this first and clearest of all the descriptions—for the whole article is written with a force and clearness of style which have perhaps had an undue weight in disarming criticism as to the facts—the valves exist in all persons, but vary much in different individuals as to location and number. Three is the average number, though sometimes four, and again only two, are well marked. The largest and most constant is about three inches from the anus, opposite the base of the bladder; the next most constant is at the upper end of the rectum; the third is about midway between these; and the fourth, or the one most rarely present, is attached to the side of the gut about an inch above the anus. The first one generally projects from the right wall; the one next above from the left; the uppermost from the right; and the one nearest the anus, when present, from the left and posterior wall; the arrangement being such, in spite of variations, as to form a spiral tract down the gut. The folds are described as semilunar in form, with the convex border attached to the side of the bowel, and occupying from one third to one half of its circumference. The surfaces are sometimes horizontal, but more often oblique, with the sharp, concave, floating margin generally directed a little upward. In breadth they vary from one half to three quarters of an inch or more in the distended state of the gut; and they are said to be composed of a duplicature of mucous membrane inclosing some cellular tissue and a few of the circular muscular fibers.

The palpable weak points in Houston's article were very soon pointed out by O'Beirne, in a work of marked and almost amusing originality. The views were indeed "new," but they are to-day accepted in many points by those whose judgment is worthy of the most confidence in these matters. O'Beirne seems rather to regret that he is unable to accept Houston's statements as to an anatomical condition which would account so fully and so easily for the physiological emptiness of the rectum and fullness of the sigmoid flexure, on which his own views depend; but nevertheless he sets himself to the task of demolishing them with great vigor and considerable success. Although he believes the rectum to be normally empty, except just at the time of defecation, he believes that condition to depend upon the anatomical arrangement of the sigmoid flexure, joined with the narrowing of the upper end of the rectum, which is entirely independent of any folds of mucous membrane. He not only denies the existence of any such folds, but states flatly that Houston is altogether incorrect in his statement that Cloquet, or any other anatomist before his time, makes even the slightest allusion to them.* He believes the folds to have been produced by the method of making the preparations—distending and hardening all the parts with spirit before making the incisions—and asserts that this method is anything but natural, and nothing more or less than an attempt to exhibit natural appearances by placing the parts in an unnatural situation—such a situation, indeed, as is not known to be necessary for the exhibition of the valvulæ conniventes or any other valves of the body. He meets the statement, that by the ordinary procedure of distending the rectum after removal from the body the valves are made to disappear, by the question, why, if such valves really exist, and if muscular fibers enter into their structure, they should not be discoverable at any time after death, or in any state of the intestine—a question very difficult of solution.

Four years later the voice of a New York surgeon is raised against these folds, and in almost the same language as O'Beirne's, though from an entirely independent stand-point. Bushe declares that he has never, in the living body, been able to detect any valve of such firmness, and capable of exerting any such influence upon the descent of the fæces, as Houston describes, though he has frequently met with accidental folds produced by the partial contraction of the bowel; and the proof that they are accidental is that in the same subject he has on different days found them to occupy different situations, but always they were unresisting and easily displaced by the extremity of the finger. He points out that, by the method of hardening the rectum after distending it with spirit, these accidental folds are rendered permanent by the induration resulting from the action of the alcohol; and that, by the method of inflation and drying, the projections resembling valves are produced by the angles formed by the setting of the intestine during the process of desiccation.

Kohlrausch describes and figures one important fold, the plica transversalis recti, which he locates at the same point as Houston's most constant one, projecting well into the lumen of the bowel from the right side. It forms rather more than a semicircle, and runs further on the anterior than on the posterior wall. Here, also, we meet the direct statement that this fold is now known as the sphincter ani tertius, though Kohlrausch does not consider such a title justified by the anatomical condition, inasmuch as the circular muscular fibers do not enter into its texture, and are not more developed here than elsewhere. For, though both these things may happen, as a rule neither is the case.

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* Regarding this question of fact, it may be well to quote Cloquet's description from Bushe, *op. cit.*, p. 60: "The inner surface of the rectum is commonly smooth in its upper half, but in the lower there are observed some parallel longitudinal wrinkles, which are thicker near the anus, and are variable in length. These wrinkles, whose number varies from four to ten or twelve, and which are called the columns of the rectum, are formed by the mucous membrane and the layer of the subjacent cellular tissue. Between these columns there are almost always to be found membranous semilunar folds, more or less numerous, oblique or transverse, of which the floating edge is directed from below upward toward the cavity of the intestine. These folds form a kind of lacunæ, of which the bottom is narrow and directed downward." It seems evident that the sinuses of Morgagni are here referred to.

Sappey says he has found in the empty state various folds of the mucous membrane, but that these have no determinate direction, and are generally only slightly marked. Three times only, in thirty recta which he examined, has he met with anything which at all answered to Kohlrausch's plica transversalis, or to Houston's chief valve. There is nothing to prove that they persist when the rectum is full; on the contrary, it is probable that they are effaced by the simple fact of distention of the latter, at least in great part. The name of valve is not, therefore, applicable to them; and, admitting even that it might be used by one of those abuses of language so frequent in anatomy, Houston would still incur the discredit of having presented as normal a fact which is only observed very exceptionally.

Henle divides the valves into two varieties, the temporary and the permanent. Of the former he describes several, which may be present or absent in the same individual at different times or in different states of the bowel. Of the permanent variety there is only one—the plica transversalis—and this one is only present in a minority of subjects.

Hyrtl describes two folds, both constant: one on the right wall lower down, and one on the opposite side. Rosswinkler also describes two folds, but locates them on opposite sides to those of Hyrtl.

There would be little profit in following these descriptions of different writers, each of them an authority on the subject treated, any further;* and, so far as we have gone, we have carefully endeavored to avoid any violence to the meaning of the text in thus separating the thickening of the muscular fibers, which can alone constitute a sphincter, from the projections and redundancies of the mucous membrane which Houston first described under the name of valves. It will readily be seen that Van Buren was correct in speaking of the third sphincter as an organ to which anatomy and physiology had been equally unsuccessful in assigning certainty of location, for we have seen it described, on equally good authority, as both mucous membrane and muscle; as on all sides of the rectum, and at almost all distances between two and four inches from the anus; as single, double, and triple; as composed of mucous membrane and cellular tissue without muscular fiber, and of well-marked muscular bands located at the base of the mucous folds and extending into their substance. From these very differences, perhaps, the true anatomy of the part may best be deduced. It is the old question of the gold and silver shield. There are bands of the circular muscular fibers of the rectum located at various points in its upper portion. These bands are more or less developed in different subjects, and are also found in no constant location; being sometimes lower or higher, and sometimes more marked on the anterior or again on the posterior wall. There are also found various folds and duplicatures of the mucous membrane, which stand in no constant relation to the thickened portions of the muscular fiber, and have no definite or constant situation, but may alter their shape with the varying condition of the bowel, and are found at different points in different subjects. These folds vary also in their structure in different people, being larger and firmer in some than in others, and occasionally containing a few fibers of the circular muscle of the bowel.

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* Morgagni ("De Sedibus et Causis Morborum") says he found valves in two subjects, situated about an inch above the anus, in one of a circular, in the other of a crucial, form. The references of Portal ("Anat. Méd."), Glisson, and Boyer ("Traité d'Anat.," Paris, 1815, t. iv, p. 377) probably all refer to the sinuses of Morgagni.

It will be remembered that Hyrtl argued backward from what he considered the physiology of the rectum to the existence of a third sphincter; and that Houston, in describing the valves of membrane, asserts that such an arrangement as he discovered was just the one which was *a posteriori* probable, and which best accounted for the accepted theories of the physiology of defecation. Nélaton, too, though he described the muscle before he gave it an action, assigns to it the same function as Houston does to his folds, and as Hyrtl believed it must of necessity possess. It is plain that each was led by a certain chain of reasoning to believe in the existence of an obstruction to the passage of fæces from the sigmoid flexure above to the rectum below; and that two of them found it in the muscular structure, and the third in the mucous membrane of the bowel. The facts upon which the necessity for a superior sphincter are supposed to rest are briefly these: the normally empty state of the rectum, and the ability to retain both wind and motion after destruction of the anus and its muscles. The force of this line of argument can not be disputed, but, were some other reasonable explanation found for these two facts than the existence of a third muscle, that muscle would soon be dropped from the descriptions of the anatomy of this part. The whole tendency of the physiology of the day is to furnish such an explanation.

The "new views" of O'Beirne with regard to the process of defecation were simply as follows: The repeated descent of fæcal masses causes the sigmoid flexure to become distended and to ascend from its position in the cavity of the true pelvis into the left iliac fossa. When this occurs, the flexure, in proportion to the rapidity and degree of its distention, begins to turn upon the contracted rectum as upon a fixed point, until at length, like the stomach, it directs its greater arch forward and upward, and its lesser, backward and downward. By this movement the contents are brought somewhat perpendicular to, and so as to press directly upon, the upper extremity of the contracted rectum. But, as the mere weight is insufficient to force a passage downward, and as this end can not be accomplished either by such gentle pressure as that exerted by the alternate contraction of the diaphragm and the abdominal muscles in ordinary respiration, or by the efforts of the flexure itself, in consequence of its muscular power being so inferior to that of the rectum, the fæces are compelled to remain stationary until such time as the increased accumulation and distention produce a sense of uneasiness sufficient to call into action those great expulsive agents, the diaphragm and abdominal muscles. These muscles, instead of acting alternately, now act simultaneously, compress the abdomen and its contents on all sides, urge the free and floating mass of small intestine downward and even into the cavity of the pelvis, so as to press forcibly not only upon the sigmoid flexure but also upon the cæcum and urinary bladder. By these means the contents of the distended flexure are acted upon in every direction, and so as to be impelled against the upper annulus of the contracted rectum, with a force sufficient to compel its parietes to separate and afford a passage. The nisus now ceases, but as soon as the rectum becomes filled it is aroused to make an expulsive effort by which its contents are driven or impacted into its pouch. Here they produce a great sense of weight and uneasiness in the perinæum, an urgent desire to go to stool, and a still stronger nisus, by which the sphincters are forced open and dilated, and the final expulsion of the fæces is effected. This reasoning, it will be seen, is entirely based upon the normal empty and contracted state of the rectum, which O'Beirne not only asserts to be a clinical fact capable of easy demonstration, but gives many reasons for, the chief being the great relative thickness of its muscular wall. He clearly pointed out also (what has been frequently verified since, and especially by those who have passed the hand into the sigmoid flexure on the living subject) that the upper extremity of the rectum was absolutely the smallest part of this portion of the bowel; but that nothing of the nature of a sphincter muscle located at this point or near it entered into his calculation, any more than did the folds of mucous membrane.

Compare, now, these teachings of O'Beirne's, in 1833, which, we have already said, are to-day accepted by those who have the best right to judge of these matters, with those of Foster, in 1880. He says the fæces, in their passage through the colon, are lodged in the sacculi during the pauses between the peristaltic waves. Arrived at the sigmoid flexure, they are supported by the bladder and the sacrum, so that they do not press on the sphincter ani. Defecation is a composite act, being superficially the result of an effort of the will, and yet carried out by means of an involuntary mechanism. The voluntary effort is composed of two factors: a pressure effect produced by the contraction of the abdominal muscles, and a relaxation of the sphincter ani muscle. By the pressure of the abdominal muscles the contents of the descending colon are driven onward into the rectum, but the sigmoid flexure itself is shielded by its situation from the direct force of this pressure, and a body introduced *per anum* into the empty rectum is not affected by even forcible contraction of the abdominal muscles. The sphincter muscle guarding the anus is habitually in a state of tonic contraction, capable of being increased or diminished by a stimulus applied either internally or externally to the anus. This tonic contraction is due, in part at least, to the action of a nervous center situated in the lumbar portion of the spinal cord. By the action of the will, by emotions, or by other nervous events, the lumbar sphincter center may be inhibited, and thus the sphincter itself relaxed; or stimulated, and thus the sphincter tightened. This relaxation is the second of the voluntary elements in the act of defecation. By these two alone the contents of the descending colon might be pressed onward into the rectum and out at the anus; but, since the sigmoid flexure itself is subject to neither of these influences, such a mode of defecation would always end in leaving it full; and therefore there is superadded to these two voluntary elements an entirely involuntary increase in the peristaltic action of the sigmoid flexure itself. The order of events is the reverse of what we have stated. The sigmoid flexure and large intestine become more and more full, while stronger and stronger peristalsis is excited in their walls. By this means the fæces are driven against the sphincter. Through a voluntary act, or sometimes at least by a simple reflex action, the lumbar center is inhibited and the sphincter relaxed. At the same moment the contraction of the abdominal muscles causes firm pressure on the descending colon, and the contents of the rectum are ejected.

It should be mentioned that the one fact on which these physiological views rest, viz., the normal empty state of the rectum, is not universally admitted. Indeed, as Hyrtl says, the rectum will be found, by any one who practices frequent digital examination, in very different states in this regard at different times in the same individual. This may or may not be entirely due to changes produced by constipation in those examined; but even he admits that it is more often found empty than any other part of the canal; and the difficulty which an opposite view leads to will be seen at once by the attempt of Bushe to explain the act of defecation, starting from the point that the fæces accumulate slowly in the rectum, and gradually lose their thinner parts by absorption while there. He goes on to say that they give rise to no uneasiness until a considerable quantity is amassed, when a sensation is created which demands their expulsion. This sensation is, he believes, not due to the mere contact of fæcal matter, for the latter generally accumulates in large quantities before the sensation is felt. Nor is it due to any peculiar acrimony which they obtain by their stay in the rectum, for when the fæces are fluid this sensation is produced as soon as they reach the rectum. Again, when once the sensation is felt and not attended to, it passes away, and does not return till the next accustomed period; and the longer it is unattended to, the less likely is it to return at all. In truth, he says, we are ignorant of the cause of this feeling, and must in the present state of our knowledge admit that it is organic, and consequently dependent upon some spontaneous change in the intestine, of which we know nothing. Rather a lame conclusion! Nor is the cause of this periodically recurring desire to evacuate the bowel touched upon in the exposition given by O'Beirne; and this is the weak point in his argument, and the one which renders Foster's explanation complete.

We need cite authorities no further to show that physiology no longer teaches the existence of an ever-present mass of fæces in the lower bowel, ready to escape at any moment when the active watchfulness of the sphincter muscle is relaxed, or to prove that into our present understanding of the cause of the emptiness of the rectum a third sphincter muscle does not enter as a necessary element, but that the true explanation of the condition lies in the anatomy of the sigmoid flexure, which, by its large size, great capability of expansion, loose mesenteric attachment, and position, is peculiarly fitted to act the part of a reservoir.

Nor does the phenomenon of retention of fæces after the destruction of the anus and its muscles necessitate the belief in a superior sphincter. So far as our reading goes, no one has as yet attempted to prove the existence of a fourth sphincter in the ascending colon; and yet the same control over the passages which has been noticed after extirpation of the anus, and has been supposed to indicate a third sphincter, has been observed to follow an artificial anus in the transverse colon.*

There are several ways of accounting for the slight control over the evacuations which many patients are found to have after extirpation of the anus, apart from the existence of a third sphincter or of the valves of the rectum. Indeed, the physiology of the act of defecation itself, which we have just described, goes far to explain why there should be a certain warning of an approaching evacuation, and this is what is generally meant when the patients are reported to have a certain amount of control over the movements. The control will be found in most cases to mean rather a consciousness of an approaching movement, a warning given in sufficient time to allow the patient to make necessary arrangements, than an ability to absolutely prevent the evacuation which is about to take place. Of actual control there is little; because the sphincter muscle, whose duty it is, under the power of the will, to prevent an evacuation, is absent. To the performance of this duty a healthy sphincter is abundantly equal, as every one has the chance to prove on his own person; and it is this ability to delay and postpone an evacuation of the bowels, rather than a constant action in preventing the escape of fæces which are ever ready to escape, which best expresses the true function of the muscle. After extirpation of the anus this one element of natural defecation is destroyed, but several others are left. The fæces tend to remain by their own consistence unless actively urged forward by the peristalsis of the bowel; and this peristalsis is not constant, but recurs periodically. The relative increase in the muscular elements in the rectum tends to keep it closed and empty until fæces are forced into it from above. Again, the pressure of the fæces, owing to the S-shaped form of the rectum, is not in the direction of the axis of the tube, but constantly against the wall, and at the points of greatest curvature the resistance is greatly increased. To these let us add the contraction of the cicatrix after extirpation, and the natural redundancy of the mucous membrane which may block up the new anus by an actual prolapse, and we have the factors which account for the clinical fact so often seen. On the other hand, the constant escape of fæces, which *at first* almost always follows these severe surgical operations upon the rectum, is best explained by the irritation of the wound and the constant reflex action which it excites.

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* The case was that of Fine, of Geneva, in 1797. "He formed an artificial anus, by which the fæcal matters escaped not continually, but once or twice a day only, and with a sensation of impending necessity which gave the patient time to make the slight preparations necessary to avoid soiling herself."—"Manuel de Méd. Pratique" de Louis Odier, de Genève. 2^{me} éd., 1811.

That the folds of mucous membrane, such as have been described, are of the nature to form an obstruction to the passage of fæces, would seem to admit of no reasonable doubt. But this obstruction is passive and not active, and is by no means sphincteric in character. When it is sufficiently great to form a real obstruction to the descent of fæces, the condition is an abnormal one; but such a condition is sometimes seen, and is one which is not to be disregarded in the pathology of stricture of the rectum. Thus, Quain,* under the head of impaction of fæces, describes the case of a man, aged forty years, who died with a large accumulation which was evidently due to the presence of two crescent-shaped shelves of mucous membrane projecting into the rectum, one attached opposite the prostate and the other about four inches higher. Each of these was more than an inch in breadth, and into each the circular muscular fibers fully entered, while even the longitudinal layer dipped slightly inward at their bases. Kohlrausch also describes an analogous case, in which he made an autopsy on a criminal who had been executed. He found an enormous dilatation of the rectum above the spot at which he locates the plica transversalis. At that point he discovered an undoubted stricture, which, from its hardness and extent, he at first considered cancerous. It presented, however, nearly the same anatomical conditions as the one just described; the mucous membrane was sound, and formed a considerable duplicature; the circular muscular fiber entered into this duplicature, and formed a hard, hypertrophied, muscular ring several lines in thickness. The longitudinal fibers passed directly over the affected spot in this case, however, and were not unusually thick or firm, and the space left between the outer and inner muscular layers by the bending inward of the latter was filled with connective tissue. A stricture was in this way formed without degeneration of the mucous membrane—a condition, however, which led to no less serious results. Such a state furnishes in itself the ground for constant aggravation, for the longitudinal fibers passing entirely over the fold must, by each contraction and by the necessary increase in their normal function, augment the substance of the fold more and more, and thus decrease the lumen of the gut. Nélaton, indeed, has written that valvular retractions of the rectum are most often only an hypertrophy of his superior sphincter, and that the projection formed by it into the cavity of the intestine is the point at which foreign bodies are most frequently arrested, as well as that at which invaginations in young children generally begin; and in all these points he is borne out by Velpeau. This idea of the pathological relations of the mucous folds and muscular bands in the causation of organic strictures may be traced through the works of Sappey, Arnold, Kohlrausch, Tauchon, Hyrtl, and Houston; and has its foundation in the fact that, as these folds are the most subject to injuries, so they may be the most frequent starting-point of those contractions of the rectum which are due to injuries, especially those from foreign bodies introduced *per anum* or swallowed, and from masses of hardened fæces, intestinal concretions, etc.

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* "Diseases of the Rectum," London, 1854, p. 273.

From a study of the literature of this question, and from the results of dissections and experiments which we have personally been able to make, we are led to the following conclusions:

1. What has been so often and so differently described as a third or superior sphincter ani muscle is in reality nothing more than a band of the circular muscular fibers of the rectum.

2. This band is not constant in its situation or size, and may be found anywhere over an area of three inches in the upper part of the rectum.

3. The folds of mucous membrane (Houston's valves) which have been associated with these bands of muscular tissue, stand in no necessary relation with them, being also inconstant, and varying much in size and position in different persons.

4. There is nothing in the physiology of the act of defecation, as at present understood, or in the fact of a certain amount of continence of fæces after extirpation of the anus, which necessitates the idea of the existence of a superior sphincter.

5. When a fold of mucous membrane is found which contains muscular tissue, and is firm enough to act as a barrier to the descent of the fæces, the arrangement may fairly be considered an abnormality, and is very apt to produce the usual signs of stricture.

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Reviews and Literary Notes.

Stricture of the Male Urethra: its Radical Cure. By Fessenden N. Otis, M. D., Professor of Genito-urinary Diseases in the College of Physicians and Surgeons, New York, etc. New York: G. P. Putnam's Sons, 1880. Pp. xxvii–360.

The views of Dr. Otis concerning stricture of the urethra have now been known to the profession for a number of years. They have excited a large measure of interest, have inspired much earnest inquiry, and, upon the whole, considering their radical character, have been submitted to tolerably fair trial. The result has been much adverse criticism and much that is commendatory. The appearance of a second edition of the work on stricture in less than two years would imply that a considerable demand still exists for the teachings of the so-called "new school." It affords us an opportunity for a more deliberate review of the achievements claimed than was heretofore possible. The main features of this new school, which Otis seeks to establish, relate, first, to the degree of dependence of gleet and certain reflex disturbances upon stricture of the urethra; secondly, to the question of what constitutes stricture; and, thirdly, to the operation of internal urethrotomy as the best means for the cure of stricture.

A chronic urethral discharge is regarded as almost invariably due to stricture, and the latter, when present, is "always the cause of its persistence." The only exception recognized is "the engagement of urethral sinuses (as the lacuna magna or some one of those occasionally met near the meatus, possibly deeper down)," and these he has "never found engaged, unless more or less coarctation at an anterior point was also present." As to what constitutes stricture, it is defined as "the slightest abnormal contraction of the urethra at any point" from its normal caliber. The "normal caliber" in a given case is determined by means of the "urethra-metre," which is passed down to the bulbous portion and dilated till a "feeling of fullness" is experienced by the patient. The size registered is then taken as the gauge to which the anterior urethra should conform. Another method of estimating the normal caliber is by calculation from the circumference of the penis, between which and the circumference of the urethra, it is alleged, there is an exact mathematical ratio. Any "abnormal contraction" having in this way been discovered, symptoms of urethral irritation existing, the urethra must be incised by the dilating urethrotome so as to fully restore its normal caliber. The urethra may be large enough to admit a No. 38 F. sound, but if the normal caliber has been ascertained to be 40 F., to this size it must be cut. To this rule the meatus offers no exception. No physiological narrowing of the orifice is admitted. The fossa navicularis is only an abnormal dilatation, the consequence of an abnormally contracted meatus. Though in the great majority of men the meatus may be smaller than the rest of the urethra, such a meatus is none the less a deviation from the highest type, and may become the source of irritation and disease. We are told that the average size of the normal male urethra is nearly 33 millimetres in circumference, and that, to properly treat strictures of large caliber, instruments are often necessary of nearly twice the size of those in common use. It is not strange, then, that these new doctrines have encountered some hostile criticism.

The effort of Dr. Otis to introduce more precision into the management of stricture is praiseworthy, and has not failed of recognition. There is, without doubt, an absurdity in affirming the absence of stricture in a urethra, say of 30 millimetres, because no obstruction is encountered by a bulbous bougie of 20 F. All urethras by no means conform to one standard measure; each one should be examined independently of all others. The treatment of stricture has doubtless undergone important modifications in consequence of the new teaching. It has been clearly shown that the urethra is a more capacious canal than had been supposed; that it is capable of receiving much larger instruments with impunity. To this fact is largely due the successful working of Bigelow's method for the performance of rapid lithotrity. This result is very generally conceded. As to the assumed relations between the size of the penis and that of the urethra, it can not be said that it has proved itself of very great value in the hands of most surgeons. The method employed is too inaccurate to be reliable. The most that may at present be admitted is, that there is in many, perhaps most, cases a general correspondence between the circumference of the penis and that of the urethra. In the operation of dilating urethrotomy, as practiced by Dr. Otis, we find as its chief merit a recognition of the truth that incision of urethral stricture, to be effective, must be thorough and complete. This truth, though admitted before, has never been insisted upon so strongly as in the writings of Dr. Otis. It is especially claimed for his method of operation that by it the division of the stricture is most completely and satisfactorily accomplished. The reproach that the operation has been performed too indiscriminately by practitioners of insufficient skill, often to the serious detriment of their patients, is unfair, and should not be allowed to influence our judgment as to its just merits.

But there are certain objections to the methods and principles of the new school which are too important to be overlooked. Let us examine some of the views of this school a little more minutely: First, how far is it proper to regard stricture as the necessary condition of gleet? How does stricture originate? It is the opinion of Dr. Otis that stricture is not the result of localized inflammation remaining as a sequel to gonorrhœa, but is due to a contraction of inflammatory deposit left during the height of the acute disease. At least so we interpret his theory; for how else can we explain gleet as due wholly to the stricture? But why should not gonorrhœa, as well as other acute inflammations, be followed by a chronic inflammation? We know how common it is for acute general eczema to be followed by localized chronic patches of the disease, which are often difficult to eradicate. Why should not the same be true of gonorrhœa? To be sure, the specific or contagious quality may be wanting, and the diseased spots preserve only the characters of common inflammation. Now, it is a property of such chronic circumscribed inflammations to produce just such thickenings of tissue as constitute stricture. But Dr. Otis admits no such chronic residue of gonorrhœa. He maintains that stricture is the sole cause of the gleet, through its acting as an impediment to the stream of urine. The urine impinges against the obstacle or lodges behind it, and then becomes inspissated and ferments, in consequence of which the mucous membrane is irritated and inflamed. Of old and contracted strictures this is perfectly true. But it is not easy to see how a stricture which does not compromise the urethral lumen more than to the extent of two millimetres (which represents the grade of many of the author's tabulated strictures) can cause any appreciable impediment to the flow of urine. It is probable that the urine in ordinary urination never distends the urethra to its full capacity. Observing the stream of urine as it is emitted, it by no means corresponds in size to the sound which the canal would easily admit. The stream preserves the shape of the slit through which it is ejected, the sides of which are but moderately separated. There is no reason why the same should not be true of the entire valvular tract. If impediment to the stream of urine alone is sufficient to account for inflammation of the mucous membrane in strictures of large caliber, it is a little strange that such contractions as we usually find just anterior to the bulb and at the meatus do not have the same effect. Otis admits a normal difference between the size of the urethra at the bulb and that just anterior to it of 2·5 millimetres, while others have found this difference to be much greater. The casts exhibited by Dr. Sands show an average difference of 12 millimetres. Otis admits the meatus to have an average circumference of only 24·72 millimetres, while he claims as the normal average caliber of the urethra nearly 33 millimetres. These variations in size must offer as much hindrance to the flow of urine as strictures of very large caliber, and yet they do not suffice to inflame the urethra. Finally, with regard to gleet which follows gonorrhœa, we would ask, if stricture be its sole cause, why does it not grow worse the longer it continues? The more the stricture contracts, the greater is the impediment to micturition, and *ergo*, the greater the irritation. But, as every one knows, the symptoms are worst at first, gradually diminish, and after a time disappear entirely, notwithstanding the stricture still remains. Even old and tight strictures are not always accompanied by gleet. Thus we find that the theory of urinary obstruction as the cause of gleet, so far as strictures of large caliber are concerned, is consonant neither with reason nor with experience. We prefer to regard stricture rather as an effect than as a cause—an effect of the same inflammation which produces the gleet. A point once the seat of chronic inflammation long remains a vulnerable spot, liable to inflame again on the slightest provocation. This well-established principle furnishes, to our mind, a much more satisfactory explanation of gleet, at least in its early stages, than an unsupported hypothesis of urinary obstruction.

A word in regard to the means employed by the author for the diagnosis of stricture. The obvious objection to the urethrometer as a measurer of the urethral caliber is that, while aiming at precision of result, with the method employed, it fails to attain it. Unquestionably, for the detection of slight inequalities of the urethra, it is a much more delicate instrument than the *bougie à boule*, but nevertheless its results are simply approximate and relative. It is introduced as far as the bulbous portion, and is there dilated to an extent previously determined by measurement of the circumference of the penis, or "till a feeling of fullness is experienced by the patient," and is then slowly withdrawn. Any portion through which it does not freely pass is considered strictured. In practice, other investigators have not found this procedure satisfactory, and, indeed, the author himself admits that further tests have to be relied on to determine whether a contracted spot is abnormal or not. The practice of taking the measure of the urethra from its largest and most distensible portion can not but lead to error. If a tube which, under distention, varies in different parts from 30 mm. to 60 mm., as shown by McBurney's casts (exhibited by Dr. Sands), can be said to have a uniform caliber at all, the above-mentioned rule is not a safe one for determining it. In this connection we remark that it is not strange that Dr. Otis has found stricture more common in the anterior than in the deeper urethra. In the more distensible bulbous urethra strictures of large caliber would readily escape detection. It may be noted, moreover, that, so far as the close strictures recorded in Otis's statistics are concerned—strictures below 13 mm. in circumference—they were most frequently found in the deeper portions of the urethra. The ratio is about ten in the posterior to four in the anterior urethra. It appears to be the strictures of large caliber which make the preponderance in favor of the anterior urethra. We believe that many of the author's positions would be less assailable but for a too strict adherence to his dogma of "the normal urethral caliber."

It remains to consider the treatment of stricture recommended by Dr. Otis. The invariable rule is, complete division of the stricture by dilating internal urethrotomy. For this purpose an instrument has been devised which leaves almost nothing to be desired. Its mechanism seems to be perfect. With this instrument 1,331 recorded operations (on some 400 patients) have been performed consecutively "without a single death or permanent disability of any sort." Such a record is truly astonishing. None the less, the operation of internal urethrotomy, especially when performed in the deep urethra, is still regarded by the majority of surgeons as a dangerous procedure. Grégory, in his recent work, "De la Méthode Sanglante dans les Rétrécissements de l'Urèthre," records 915 cases, with 46 deaths, or 5 deaths in 100 cases. Heath states that, according to statistics of the University College Hospital (London), there were 7 deaths in 130 cases of internal urethrotomy, and under the latter were included many cases of simple division of the meatus. But, aside from the danger to life, the risks of hæmorrhage, infiltration of urine, incurvation of the penis, etc., are no trifling objections. The general opinion remains that internal urethrotomy should be resorted to only after gradual dilatation has failed. There has long been a consensus of medical opinion as to the advantage of gradual dilatation of stricture, where practicable, over all other methods of treatment. Only when this has failed should recourse be had to more violent procedures. It should be borne in mind that recent stricture is not a cicatrix unless due to a solution of continuity (as from an ulceration or an injury), but consists of new connective tissue, which to a considerable extent is amenable to dilatation. Only after it has undergone atrophic degeneration does it become cicatricial and nondilatable. The new connective-tissue formation, or *callus*, as the Germans call it, does not present a uniform density. There are portions, as shown by Dittel, where the tissue is comparatively loose and yielding. By gradual dilatation the new tissue may be so "rarefied" at these points as to cause the stricture to disappear entirely. Certain of the denser portions may remain, and after a time recontract, though often not enough to cause noticeable trouble. Now, were such a stricture at once incised, the whole mass would contract together, and the opportunity of reclaiming any portion of the callus would be lost for ever. Again, there is a variety of connective-tissue stricture which, instead of occupying the parenchyma of the submucous or spongy tissue, is more superficial, and encroaches upon the urethral canal, so as to form bands or valve-like projections. With these the mucous membrane is not always involved. It may be freely movable over them, or it may be bound down, corrugated, or wrinkled. The *new formation* in such a stricture does not necessarily surround the entire canal; but, from its hemming the mucous membrane on one side, the urethra would appear contracted in its entire circumference. Strictures of this character are described and figured by Voillemier. Any one with experience in urethral diseases must often have encountered such little bands obstructing the urethra, very perceptible to the touch when examining with the bulbous bougie, but which disappear under gentle dilatation so easily that scarcely any resistance to the sound can be felt. The band is very likely ruptured beneath the mucous membrane; the latter is loosened from its attachments; its folds are smoothed out, and the obstruction is entirely removed. Now, suppose such a band stretched across the floor of the urethra, and, following the practice of our author, an incision is made through the sound mucous membrane of the upper urethral wall: in what condition is the urethra left? An injury is inflicted where there was nothing abnormal before, and the connective-tissue band is left untouched to gradually undergo cicatricial degeneration. Were the incision by chance made through the band, no more would be accomplished than by simple dilatation, and a wound of the mucous membrane would be superadded. It may be objected that in this latter case what we have termed dilatation is rather divulsion. But it is a question whether it is not always something of the same sort that takes place in gradual dilatation. The fibers are stretched, attenuated, and often doubtless ruptured. Thus the advantage of gradual dilatation is that it acts upon the new formation which causes the stricture, rendering it, so far as possible, inoperative for harm; while urethrotomy ignores the new tissue, sacrifices more sound tissue, and substitutes a "cicatricial splice."

But Dr. Otis claims that by urethrotomy a permanent cure is effected. To this proposition we merely say that it requires stronger confirmatory evidence than it has yet received to controvert the well-settled conclusions of all previous experience. A certain limited number of cases have been adduced showing no recontraction after periods varying from a month to a few years. Sir Henry Thompson states that three or four years elapse before patients begin to notice any recontraction after division. The results of external urethrotomy, where the division is naturally much more complete than after the internal operation, show that recontraction is by no means uncommon. But, however brilliant the writer's results, they do not justify us in entirely discarding safer measures, for the advantages of which they afford an inadequate compensation.

To conclude, while we can not too warmly commend the earnest spirit of our author's work, while we admit that his labors will not fail to promote success in the study and management of urethral stricture, we believe his views would be much more convincing but for their lack of conservatism. As it is, they are only acceptable *cum grano salis.*

Diagnosis and Treatment of Ear Diseases. By Albert H. Buck, M. D., Aural Surgeon to the New York Eye and Ear Infirmary, etc. New York: William Wood & Co., 1880. Pp. vii–411. [Wood's Library of Standard Medical Authors.]

In this work the author has pursued the somewhat unusual plan, as he states in the preface, of presenting a picture of diseases of the ear as they have appeared to *him* in private and hospital practice. Dr. Buck's keenness of observation and thorough knowledge of his subject are already well known to the profession; but this volume, fresh from his hands, will convince those physicians who do not know him personally of his extreme care and caution in drawing conclusions, and of the conscientiousness with which every detail is looked after and all doubtful points in the management of a case cleared up or rejected. He has, in the main, described only those methods of treatment which he has himself tested, and found both safe and efficient.

The work is divided into eleven chapters, the first being devoted to a sketch of the physiology of the organ of hearing, a part of the subject to which Dr. Buck has in the past given special attention. The description of the labyrinth and the organ of Corti, and their relations to the middle ear, is admirably clear. He offers a suggestion as to the function of the semicircular canals which is certainly plausible, though it may not be generally accepted. He thinks that their function is to protect the ductus cochlearis and the organs of Corti from injury in cases where the stirrup is driven too violently into the oval window. The second chapter is upon the examination of the patient. Buck rightly regards the ordinary tests of a person's hearing power as unsatisfactory; and he compares the watch with Politzer's acoumeter, to the advantage of the former. Toynbee's and von Tröltsch's specula are condemned, and the preference in most cases is given to Wilde's conical specula. The third chapter takes up diseases of the auricle. As regards the relation existing between hæmatoma auris and insanity, the author thinks that insane persons are more liable to the disease in question, simply because malnutrition reaches a higher grade among them as a class than among the mentally sound, and in this he is probably correct.

In Chapter IV we come to diseases of the external auditory canal. In regard to the reflex connection supposed to exist between the pharynx and the external auditory canal, Buck reasons that, if it be once admitted that increased functional activity of the pharyngeal glandular elements may in a reflex manner increase the functional activity of the ceruminous glands of the auditory canal, it is possible also that a subsequent atrophy of the pharyngeal glands may bring about, in the same reflex manner, a wasting of the glands in the external auditory canal. The author holds that inspissated cerumen can be removed much more quickly and effectively by the use of the curette, the cotton-holder, and the angular forceps, than by syringing or any other plan, to which the reviewer heartily agrees. The phrase "sloppy thraldom of the syringe" is well chosen. The author also holds that in very many cases of furuncles of the auditory canal the knife disappoints us; the pain being relieved only for a short time, and the duration of the disease not being materially shortened. Indications are, however, carefully given for the use of the knife in certain cases where it will probably do good. Under the head of acute and chronic diffuse inflammation of the auditory canal, Buck groups otitis externa diffusa, periostitis, eczema, and otomycosis, very properly remarking that in the great majority of these cases he finds it impossible to make a positive diagnosis, for they are so complicated that the statement of the correct anatomical diagnosis would require a long description, and give but a crude conception of the pathological condition. When vegetable parasites are met with in the auditory canal or in the middle ear, the author regards them as simply an accidental complication, and not as an independent cause of disease. He gives the preference to nitrate of silver over all other drugs in the treatment of inflammation of the canal and middle ear, because it so markedly restrains the production of lymphoid corpuscles. He rejects alcohol and carbolic acid in the treatment of aspergillus, and carefully avoids using any moisture in the canal in these cases. Buck believes that in syphilitic disease of the auditory canal the lesions are so characteristic that the observer can scarcely fail to be struck with their individuality, thus putting himself in conflict with the statements of Schwartze. In speaking of the presence of foreign bodies in the canal, the author inveighs against the use of the syringe in cases where the foreign body fills the canal as irrational and unpractical. He prefers to rely upon the forceps, curette, and hook, and in this the reviewer agrees with him, if the removal is to be done by an expert, but not otherwise.

Chapter V tells us the method of examining the middle ear, and is thoroughly practical in its aim and clear in its expression. In the next chapter the author takes up the non-purulent forms of disease of the middle ear, and here the reviewer takes issue with Dr. Buck upon the point of posterior rhinoscopy. This the reviewer regards as a very important aid to diagnosis in diseases of the ear, and holds that a thorough rhinoscopic examination should be made in every case of suspected middle-ear trouble. The author is skeptical as to the effect of contractions of the tensor tympani muscle in causing excursions of the drum membrane, and thinks that the latter are more probably due to the alternate rarefaction and condensation of the air in the middle ear, caused by contraction of the tubal muscles. He has no faith in the practice of injecting fluids into the Eustachian tubes and middle ears, and thus virtually establishes the rule that "in cases of simple, uncomplicated acute or subacute catarrhal inflammation of the middle ear, all direct therapeutic interference with this region by means of drugs is to be dispensed with." The gastric digestion must be looked after, and the main reliance must be placed on inflation of the middle ear by means of compressed air. Cases of subacute and chronic catarrh of the middle ear Buck regards as practically incurable, and in cases of sclerosis of the tympanic mucous membrane no material improvement in the acuteness of hearing can reasonably be expected from treatment. Chapter VII treats of the purulent forms of inflammation of the middle ear. The author takes a favorable view of acute purulent inflammation, provided the proper treatment is begun early enough. The reviewer assents to this favorable prognosis, but is inclined to dissent from Buck's assertion that "a localized meningitis may be assumed to exist in every severe case of acute purulent inflammation of the middle ear"; this he regards as questionable. The rules for treatment in these cases are very carefully defined by the author, especially in reference to paracentesis of the drum membrane. The incision should be long, and, if there is much swelling of the parts, it is better to convert the linear into a crucial or T-shaped incision. Buck very justly emphasizes the rule that no attempt should be made to arrest or diminish the discharge so long as pain persists. He relies mainly upon nitrate of silver as a means of checking the purulent secretion. The section upon chronic purulent inflammation is rendered very clear by the subdivisions or varieties of inflammation into which Buck divides the subject, and the success in treatment is seen to be largely dependent upon the care and thoroughness with which cleanliness is carried out. An interesting sub-section of this chapter is devoted to those cases of purulent disease in which the bone is involved.

Fractures of the temporal bone form the subject of the eighth chapter. In speaking of the significance of bleeding from the ears, the author accepts the interpretation of Prescott Hewett, and adds that "when a fall or blow upon the head is followed by bleeding from the ear, no matter how trivial, we may diagnose a fracture of the temporal bone in the neighborhood of Shrapnell's membrane, and probably in the line of the Glaserian fissure." As a sort of corollary, it may be added that "the lesions demonstrable by the aid of the speculum and reflected light, in the soft parts immediately surrounding Shrapnell's membrane, furnish us with a valuable means of locating at least a part of the injury done to the temporal bone." In Chapter IX we have a clear presentation of disease of the mastoid process. Buck thinks that the existence of a sclerosed condition of the mastoid may be assumed in the great majority of cases of chronic purulent inflammation of the middle ear, which is undoubtedly true. This chapter is admirably written.

In Chapter X are considered various conditions of the drum membrane, ossicles, and tympanic cavity, such as atrophy of the membrane, horny growths, vascular growths of the membrane, absence of the hammer, ruptures of the drum-head, and new growths in the middle ear. In the last chapter we come to those forms of aural disease in which the labyrinth is believed to be involved, and here the author's cautiousness in making a diagnosis is more than ever clearly marked. He believes in primary acute inflammation of the labyrinth, but admits the great difficulty of diagnosticating it. He deprecates the looseness of application of the term "Ménière's disease," and thinks that in many of these cases the medulla oblongata is more likely to be the seat of the disease than the labyrinth. He also thinks that in some cases of syphilitic disease, where it is assumed that the labyrinth is the seat of the syphilitic lesion, it is quite possible that the lesion may be in the middle ear or in the auditory nerve before it enters the labyrinth, which is very true. He is inclined to think that the syphilitic lesion may in some cases be confined to the mucous membrane lining the round window and the secondary tympanic membrane. Any swelling of these parts produces pressure upon the fluid of the labyrinth, and, if not arrested, might displace the foot-plate of the stirrup outward, and all degrees of hardness of hearing might in this way be produced.

In conclusion, we would commend Dr. Buck's book most heartily as the outcome of the experience and ripe judgment of many years' conscientious work in the practice of diseases of the ear. We wish that the work were more fully illustrated, especially in the domain of pathology, and that the publishers had dressed it in a manner more becoming its value. There are but few things to condemn, while there are many to praise.

A Practical Treatise on the Diseases of Women. By T. Gaillard Thomas, M. D., Professor of Diseases of Women in the College of Physicians and Surgeons, New York, etc. Fifth edition, enlarged and thoroughly revised. Containing two hundred and sixty-six engravings on wood. Philadelphia: Henry C. Lea's Son & Co., 1880. Pp. xx–17 to 806, inclusive.

By common consent, Professor Thomas's work ranks as, all things considered, the best text-book of gynæcology ever written. In saying this we do not mean that what the author says is, in every particular, sounder doctrine than is to be found anywhere else in the literature of the subject. No man can so impress a book with his own individuality, as Dr. Thomas has done, without embodying in it some views that are not likely to be acquiesced in on all sides.

The work is so well known and so highly esteemed that we need do but little more than point out the more noticeable of the new matter in this edition. Besides the careful revision to which the whole has evidently been subjected, we notice a new chapter on General Considerations upon Uterine Pathology and Treatment, one on Congenital and Infantile Malformations, one on Uterine Fungosities, one on Laceration of the Cervix, one on Oöphorectomy, and one on Extra-Uterine Pregnancy, together with a section on Adenoma of the Uterus. This additional matter embraces much that might be analyzed to advantage, but our space will not allow us to do more than notice two portions of the book, upon which the author asks "the lenient judgment of his readers."

The first of these relates to the mechanical contrivances for the treatment of flexions of the uterus. We see no reason to doubt the efficiency of these contrivances, whatever opinion we may hold as to the mechanism by which they fulfill their purpose, and however we may differ from the author in our estimate of the importance of the conditions for which they are recommended.

The second pertains to the diagrams illustrative of the perinæum and its injuries, particularly the anatomy of the perinæum, its physiology, its "philosophy," as the author cleverly puts it. Dr. Thomas very properly criticises the diagrams ordinarily used to represent the topography of the parts seen in a median antero-posterior section of the pelvis and its contents, and yet the one that he gives as expressing his own idea of "the true relations of the vagina, bladder, uterus, rectum, and perinæum to each other" seems to us to contain some errors. For instance, the whole coccyx is represented as situated below the level of the lower edge of the symphysis pubis, which latter we supposed to be the lowest point of the pelvis as seen in median antero-posterior section. Among the minor points that seem strange to us are: (1) the open anus, expanding gradually into the ampulla of the rectum, rather than a closed canal, piercing the muscular structures and opening abruptly into the pouch of the rectum; and (2) the amount of tissue intervening between the urethra and the vagina. The point of greatest interest, however, is the perinæum. According to Dr. Thomas, its section has the shape of a triangle, with its apex turned somewhat backward. Now, doubtless, there is a certain amount of loose tissue between the rectum and the vagina, growing less and less from below upward, so that, as concerns a mere section of the part, it is more or less triangular in outline. Our observation has not led us to include this loose tissue as a portion of the "perineal body," however, for we have always found that, on recto-vaginal palpation, the tissue in question was exceedingly mobile and well-nigh imperceptible to the touch, so that (except for the intervention of this thin and lax septum) the one digit might easily be made to meet the other on the dead level formed by the muscular floor of the pelvis—and not by ascending the slopes of a wedge-shaped mass of solid tissue, to meet at its summit. If our observation is correct, then, the perinæum is not wedge-shaped, and can have no "keystone" action in supporting the rectum and the vagina. In fact, the part played by the perinæum in supporting the pelvic contents in general seems to us to have been over-estimated. We except the recto-vaginal septum, which really seems to have no other support. The perinæum may come to the rescue when the natural supports fail, but in the normal state of the parts this does not seem to us to be its function. We have not space to give our reasons for this statement, which we well know to be at variance with the general opinion, but we would suggest a simple test by which any one can ascertain whether the perinæum actually sustains the anterior wall of the vagina and the superincumbent bladder: introduce a finger into the vagina, the woman standing, and with it forcibly depress the perinæum—the anterior wall of the vagina will not follow the finger, but will remain just where it was before, provided all the parts are in a normal state. Such, at least, is our experience.

We would repeat that, as a whole, the work is most admirable, and we would commend to the reader even those parts of it in which, as we believe, there is some error.

An Elementary Treatise on the Function of Vision and its Anomalies. By Dr. Giraud-Teulon, Member of the Academy of Medicine, Paris, etc. Translated from the second French edition by Lloyd Owen, F. R. C. S. I., Surgeon to the Birmingham and Midland Eye Hospital, etc. London: Baillière, Tindall, & Cox, 1880. Pp. viii–158.

This little book is a very practical and intelligible presentation of a subject somewhat difficult to understand. The author occupies such a high position among scientific medical men, that anything he may put forth will be accepted as authoritative and almost above criticism. The book is divided into two parts, and each part into several chapters. Part I is a presentation of the generally accepted ideas upon the physiology of the eye, and is subdivided into three chapters. The first treats of the eye as an optical instrument. The old term *optical center*, for the point in which all the straight lines, which may be mentally drawn from a certain external point to a corresponding position in the image, cross each other, is here called the *center of similitude.* The explanation of why objects are seen erect, although the retinal images are inverted, is very simple and plain. The faculty of seeing erect is an innate faculty, and its seat exists in the cylindrical retinal element set perpendicularly to the sensitive surface, and whose mode of perception consists in transporting its sensations outside of ourselves in its diametrical direction. Geometry reverses the picture; but it is not this which the sensorium feels: this is the object itself. Giraud-Teulon is epigrammatic when he says: "The retina is the birthplace of geometry." His definitions are exceedingly comprehensive, as when he says that "the range of vision designates the state of the organ, its condition as an instrument of refraction, both static and dynamic." The second chapter considers the association of the two eyes in the act of unaided vision. Here the author takes occasion to deprecate the use of the term *horopter;* for, the doctrine of identical points of the two retinæ having collapsed, that which is meant by the word has no real existence. It is an indisputable fact that the images of all objects in the two eyes are stereoscopic. Here again comes in the author's epigrammatic style, when he speaks of the eye in binocular single vision as a "geodesical instrument." The third chapter considers the physiological influence of age upon the properties of the visual apparatus.

Part II treats of functional pathology, treatment, and hygiene, and is subdivided into five chapters. Though the manner of treating this subject is elementary, it yet makes interesting reading also for the expert. The author combats the popular prejudice against spectacles, and at the same time clearly shows the evils that may arise from leaving the choice of a glass to the patient. The sub-section upon the treatment and hygiene of presbyopia is admirable. There is a short but interesting discussion of the actual value of the myopic eye, unprovided with spectacles, in its relations with distant objects, and another upon the mechanism of progressive myopia. The section upon the hygiene and treatment of myopia is also very satisfactory. Another epigrammatic phrase is: "Myopia is a product of civilization." The author calls attention to what is now generally admitted by observing ophthalmologists, that myopia, before presenting evidence of anatomical change, passes through a preliminary stage of simple accommodative spasm. Sooner or later, however, this apparent myopia becomes real, and perhaps steadily progressive.

The author is emphatic in regarding hemeralopia in the majority of cases as the beginning of amblyopia—as an early symptom of a diminution in the general acuteness of vision. In speaking of polyopia in one eye, he rejects *in toto* the idea of a retinal hallucination as explanatory of this variety of polyopia, as the idea of a double sensation in the same retinal element is absolutely incompatible with the fundamental property of the rod. In the section upon the therapeutics of squint, Giraud-Teulon admits that the question of strabismus is practically abandoned at present in France, owing to the innumerable unsuccessful operations. He thinks that there has been still too little done toward assigning to tenotomy its true place. He thinks, however, that the true treatment for progressive myopia is to be found in tenotomy. The directions for the fitting and mounting of glasses are very carefully and explicitly drawn, and show clearly how the matter can not be properly carried out unless by one specially trained in ophthalmological studies.

The translator has done his work well, and the volume is a valuable addition to the number of elementary works upon scientific medicine.

A Treatise on Diphtheria. By A. Jacobi, M. D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, New York, etc. New York: William Wood & Co., 1880. Pp. x–252.

As stated by Dr. Jacobi in his preface, this book "may be considered as an augmented edition of the author's views as published in the second volume of C. Gerhardt's "Handbuch der Kinderkrankheiten," 1877. The work is divided into nine chapters. Chapter I treats of the history; II, the etiology; III, the manner of infection; IV, contagion and incubation; V, symptoms; VI, anatomical appearances; VII, diagnosis; VIII, prognosis; IX, treatment. A summary is added at the close of each chapter. Dr. Jacobi does not accept the bacteria doctrine of the origin of the disease. Exposure and colds act only as proximate causes. "Filth contributes to the generation of diphtheria, as it does to dysentery and typhoid fever." There are cases in which a local infection of the skin, or of a wound, may be one of the causes, or the only cause, of the disease; and there are cases in which the poison, in passing through the pharynx, gives rise to local phenomena before the system at large shows evidence of infection. But, as a general thing, diphtheria must be looked upon as a constitutional disease, giving rise to local phenomena in the same way as scarlatina does on the skin, etc. The disease is regarded by Dr. Jacobi as very contagious, and is conveyed by the patient and his surroundings, furniture, towels, etc. The period of incubation is two days or more. Three forms of diphtheria are found in the fauces: the croupous, the diphtheritic, and the necrotic. Membranous croup and diphtheritic laryngitis are one and the same disease. The chapter on treatment is the fullest. "Alcohol is a very important adjuvant and remedy. The dose must often be apparently large, from two to twelve ounces daily, according to circumstances." "The main indication in local diphtheria is local disinfection." "Drinking of large quantities of water, with or without stimulants, incites the action of the muciparous glands and aids in macerating membranes." Lime-water and lactic acid are not so reliable for this purpose. "Chloride of iron is among the most reliable antiseptic and astringent agents. It should be given in moderate doses frequently repeated, mixed with glycerine and water, to which potassium or sodium chlorate may be added to advantage. Carbolic acid is useful locally and internally. Nourishment is of very great importance.

The Descriptive Atlas of Anatomy: a Representation of the Anatomy of the Human Body, in 92 royal 4to plates, containing five hundred and fifty figures. Philadelphia: J. B. Lippincott & Co., 1880. 4to, plates and pp. 11 of index.

This work is edited anonymously, and very properly so, there being nothing of originality in the production. It is simply a judicious selection of anatomical plates, all of which have been "carefully revised by a metropolitan hospital surgeon and a successful teacher of anatomy in one of the chief London medical schools."

The work is a good one for the purpose intended, and we prophesy that it will be a popular one with students, the plates being plain, simple, and yet complete. Simplicity, indeed, seems to have been one of the chief points aimed at in its preparation, and wisely. The name of each part is clearly indicated, the name being attached to the particular part to which it belongs; and in this way all complicated reference notes, which take time for elucidation, are avoided. To the bones might have been added with advantage the red and blue lines, distinguishing the origin from the insertion of the muscles, used in Holden's "Osteology"; but the figures are very plain, and the joints and their ligaments are well represented. We notice many figures which will be familiar to the student of Gray, and many more which are adapted from the more complete standard works, and which add greatly to the value of this one, especially in the few pages which are devoted to the viscera. Among these we notice microscopic drawings of the kidney, of the wall of the small intestine, and of a Graafian follicle and ovary. As we come to the blood-vessels, we find some very attractive plates, the arteries being plainly drawn and colored red, to distinguish them from the veins in blue. We are inclined to consider this the best part of the work. In the section devoted to nerves we find plates representing the convolutions by name, and vertical cross-sections of the hemispheres—things which are now necessary for the student preparing for examination to be acquainted with. We notice the familiar antero-posterior vertical section of the pelvis, but we fail to see any substitute for the lateral view of the pelvic fascia which has for several years disfigured the last page of Gray. There is no text in the work: it consists solely of preface, plates, and index; and the only criticism we have to offer is upon the impressions of the plates themselves, which, in the particular copy in our possession, are by no means specimens of good presswork.

Wood's Ophthalmic Test-Types and Color-Blindness Tests. New York: William Wood & Co.

This publication consists of a long pasteboard box, containing upon cardboard Snellen's test-types for determining the acuity of distant vision; Jaeger's test-types for testing the acuity of near vision and the state of the accommodation; a small set of trial-glasses; tests for astigmatism; and a set of colored worsteds for the detection of color-blindness by Holmgren's method. Accompanying these types are two small pamphlets, one entitled "How to Choose Glasses," by Dr. H. D. Noyes; and the other, the explanatory text, by Dr. G. R. Cutter, of the test-types and color-blindness tests. The box and its contents can not be regarded with unmixed approval. In the first place, it is awkward in shape and size, and might have been made much smaller by having the test-types printed on paper instead of cardboard, so as to admit of being folded into a small compass. The trial-glasses furnished are cheap glass, not entirely free from aberration, and there is a mistake in their marking, the strongest pair being marked half a dioptric (.5) instead of five dioptrics (5). We do not believe in the principle of putting into the hands of the general practitioner methods for testing and examining cases of errors of refraction, especially when the test-glasses are faulty. The subject of anomalies of refraction and accommodation can not be considered properly by anybody but an expert; and the means here provided for the general practitioner will almost surely tempt him into prescribing for his patient and fitting him with glasses, and probably afford him the opportunity of making a mistake, which must subsequently be corrected by an expert. The explanatory text is sufficient for the purpose, and the part relating to color-blindness is well presented. We differ with Dr. Cutter as to the comparative rarity of astigmatism, for we think it by no means rare. The pamphlet of Dr. Noyes upon the varieties, application, and choice of spectacles is clear and readable; but the chief objection is to the test-glasses, which should be of good glass, corrected as far as may be, and properly marked.

A Practical Treatise on Fractures and Dislocations. By Frank Hastings Hamilton, A. M., M. D., LL. D., Surgeon to Bellevue Hospital, New York, etc. Sixth edition, revised and improved. Illustrated with three hundred and fifty-two woodcuts. Philadelphia: Henry C. Lea's Son & Co., 1880. Pp. xxiv-27 to 909, inclusive.

A formal review of Professor Hamilton's classical work is scarcely called for at the present day. This edition, besides having been carefully revised, has been in part entirely rewritten—for instance, the chapter on fractures of the patella; and a chapter on general prognosis has been added. The work, as a whole, is one of the very few medical books of American origin that are everywhere accorded a standard character. Its subject-matter unavoidably comes home to every general practitioner, as a branch of our art in which he can not afford to neglect the fullest and most practical information—of just such a character as it, and it alone, furnishes.

We must not omit to praise the publishers for the general get-up of the volume, and particularly for the adoption, in this among several of their most important publications, of a very pleasing and seemingly durable half-russia binding, which, while adding but little to the cost, forms a marked contrast to the monotonous sheep and black muslin of a few years ago.

On the Construction, Organization, and General Arrangements of Hospitals for the Insane: with Some Remarks on Insanity and its Treatment. By Thomas S. Kirkbride, M. D., LL. D., Physician-in-Chief and Superintendent of the Pennsylvania Hospital for the Insane, at Philadelphia, etc. Second edition, with revisions, additions, and new illustrations. Philadelphia: J. B. Lippincott & Co., 1880. Pp. 320.

The first edition of this work was published twenty-six years ago, and the conclusions embodied in the present elegant volume are the result of forty-two years' residence among the insane, and the personal responsibility for over eight thousand patients. The author modestly disclaims any special novelty or interest for his views, but the book will well repay the perusal of all who are concerned in providing for the insane, and those of the community who are interested in their welfare. It covers the whole ground. The chapter on Restraint and Seclusion would be of itself a sufficient vindication from recent public aspersions upon the integrity and ability of American superintendents; for Dr. Kirkbride is an acknowledged and honored representative of them, and his views are wise and humane.

A Manual of Medical Jurisprudence. By Alfred Swaine Taylor, M. D., F. R. S., Fellow of the Royal College of Physicians, etc. Eighth American edition, from the tenth London edition. . . . Edited, with additional notes and references, by John J. Reese, M. D., Professor of Medical Jurisprudence and Toxicology in the University of Pennsylvania, etc. With illustrations on wood. Philadelphia: Henry C. Lea's Son & Co., 1880. Pp. xx–17 to 933, inclusive.

We are informed that the late Dr. Taylor took special pains in revising this edition of his well-known text-book, and a perusal of the volume fully bears out the statement. As it stands, with the additions made by Dr. Reese and the previous editors, it is not only an excellent manual for students, but also an ample work of reference.

Food for the Invalid, the Convalescent, the Dyspeptic, and the Gouty. By J. Milner Fothergill, M. D., Edin., Member of the Royal College of Physicians of London, etc., and Horatio C. Wood, M. D., Professor of Materia Medica and Therapeutics, etc. New York: Macmillan & Co., 1880. Pp. 157. [Price, $1.]

This book consists of six parts: 1. The title-page, from which we learn that it is the joint production of Dr. Fothergill and Dr. Wood. 2. A legend informing us that it is copyrighted by Dr. Wood. 3. A dedication ("to the shade of Edward Gibbon"), "by the author." 4. A "prefatory note" (not signed), stating that "the idea of this little book originated in the fertile brain of Dr. Fothergill, by whom also the preliminary remarks were written." 5. The "preliminary remarks," extending from p. 1 to p. 150. 6. The index, pp. 151 to 157, inclusive. The "preliminary remarks" include twenty-eight pages of "introduction," devoted to a very superficial consideration of the subject of dietetics, and rather more than a hundred pages of "recipes." The latter are very useful, and, apart from the attempt to mystify the reader as to its real authorship, the book is to be commended.

Ophthalmic and Otic Memoranda. By D. B. St. John Roosa, M. D., Professor of Ophthalmology in the University of the City of New York, etc., and Edward T. Ely, M. D., Assistant to the Chair of Ophthalmology, University of the City of New York, etc. Revised edition. New York: William Wood & Co., 1880. 16mo, pp. xii–298.

In the preface to the revised edition of this little pocket work, the authors state that they have endeavored to remedy as far as practicable the abbreviated, condensed style of the first edition. This is a step in the right direction, but there is still room for improvement. As a compendium or dictionary of the sciences of ophthalmology and otology, the volume will be found a trustworthy aid to the memory; though there are some points of therapeutics which are open to criticism, as on page 95, where atropine is recommended for phlyctænular conjunctivitis. Unless the phlyctænula is on the corneal margin, we do not think it advisable to use atropine, for it is not necessary, and its effects upon the ciliary muscle and iris are sometimes annoying in the extreme. When the vesicle is on the margin of the cornea, it is well to employ atropine in order to prevent any possible extension of the infiltration to the cornea itself.

Photographic Illustrations of Cutaneous Syphilis. By George Henry Fox, A. M., M. D., Clinical Lecturer on Diseases of the Skin, College of Physicians and Surgeons, New York, etc. Parts i, ii, iii, iv, v, and vi. New York: E. B. Treat. [Price, $2 each.]

We are glad to see that Dr. Fox has carried his illustrations of cutaneous affections into the domain of syphilis. It was almost a necessity that he should do so, in order to complete the work. The parts now before us contain three representations of erythematous affections, one of the pigmentation left by a syphilide, one of leucoderma following a syphilitic eruption, five of various forms of purely papular syphilides, five of the papulo-squamous, two of the papulo-pustular, three of the pustular, three of the squamous, and two of the tubercular forms of cutaneous syphilis, together with syphilitic onychia, hydroa (pemphigus iris), and squamous eczema. They are all good, except those of the erythematous affections (the correct coloring of which is a matter of great difficulty), in which lesions that ought to appear as maculæ give us rather the impression of the glossy, reddish, depressed cicatrices seen soon after recovery from variola. The pictures vary a good deal in excellence, but we think we see an improvement as we go along. That of the humid papular syphilide (syphiloderma papulosum humidum) seems to us the most life-like.

Cutaneous and Venereal Memoranda. By Henry G. Piffard, A. M., M. D., Professor of Dermatology, University of the City of New York, etc., and George Henry Fox, A. M., M. D., Surgeon to the New York Dispensary, etc. Second edition. New York: William Wood & Co., 1880. 16mo, pp. viii–309.

This well-known manual appears with but little change in the second edition, beyond the correction of typographical errors, the addition of a few formulæ, and certain changes of nomenclature to correspond with that of the New York Dermatological Society. As it is not a mere aid to memory, but aims to inculcate principles, it can be most highly commended to those who are not always able to have recourse to the larger works.

Clinical Lectures, and Cases, with Commentaries. By Henry Thompson, M. D., M. A. Cantab., F. R. C. P. Lond., Consulting Physician to the Middlesex Hospital. London: J. & A. Churchill, 1880. Pp. x–197.

This volume is a collection of miscellaneous papers which have appeared in the journals and in the "Transactions of the Clinical Society of London." The author's "main purpose is to leave it as a legacy to the Middlesex Hospital—*in memoriam.*"

The Care and Culture of Children; a Practical Treatise for the Use of Parents. By Thomas S. Sozinsky, M. D., Ph. D., etc. Philadelphia: H. C. Watts Co., 1880. Pp. 484.

About one hundred and forty pages of this volume are given to the consideration of the diseases of children, and the remedies to be employed in sickness. This part we must condemn, as we do not approve of books which attempt to instruct parents how to practice medicine in the family.

Books and Pamphlets Received.—Atlas of Skin Diseases. By Louis A. Duhring, M. D., Professor of Skin Diseases in the Hospital of the University of Pennsylvania, etc. Part VIII: Erythema Multiforme (Papulosum), Psoriasis, Syphiloderma (Tuberculosum), Tinea Trichophytina (Circinata et Tonsurans). Philadelphia: J. B. Lippincott & Co., 1880. 4to, colored plates. ═══ On Certain Conditions of Nervous Derangements: Somnambulism, Hypnotism, Hysteria, Hysteroid Affections, etc. By William A. Hammond, M. D., Surgeon-General, U. S. Army (retired list), etc. New York: G. P. Putnam's Sons, 1881. Pp. 256. [Price, $1.75.] ═══ Clinical Lectures on the Physiological Pathology and Treatment of Syphilis, together with a Fasciculus of Class-Room Lessons covering the Initiatory Period. By Fessenden N. Otis, M. D., Clinical Professor of Genito-Urinary Diseases in the College of Physicians and Surgeons, New York, etc. New York: G. P. Putnam's Sons, 1881. Pp. xvi–116. [Price, $1.75.] ═══ Fever: a Study in Morbid and Normal Physiology. By H. C. Wood, A. M., M. D., Professor of Materia Medica and Therapeutics, etc., in the University of Pennsylvania, etc. Philadelphia: J. B. Lippincott & Co., 1880. 4to, pp. vi–258. [Smithsonian Contributions to Knowledge, 357.] ═══ Relapse of Typhoid Fever, especially with Reference to the Temperature. By J. Pearson Irvine, M. D., B. Sc., F. R. C. P. Lond., Assistant Physician to Charing Cross Hospital, etc. With temperature charts. London: J. & A. Churchill, 1880. Pp. 144. ═══ Recueil des Travaux Chimiques du Dr. Domingos Freire, Professeur Titulaire de Chimie Organique à la Faculté de Médecine de Rio de Janeiro, etc. Suivi des Recherches sur la Cause, la Nature, et le Traitement de la Fièvre Jaune, par le même auteur. Avec figures dans le texte. Rio de Janeiro: Molarinho & Mont Alverne, 1880. Pp. 335–ix. ═══ A Manual of Diseases of the Throat and Nose. By Francke Huntington Bosworth, A. M., M. D., Lecturer on Diseases of the Throat in the Bellevue Hospital Medical College, etc. New York: William Wood & Co., 1881. Pp. xx–427. ═══ An Index of Comparative Therapeutics, with Tables of Differential Diagnosis, a Pronouncing Dose-List in the Genitive Case, a List of Medicines used in Homœopathic Practice, etc. By Samuel O. L. Potter, M. D., President of the Milwaukee Academy of Medicine, etc. Chicago: Duncan Brothers, 1880. Pp. vi–280. ═══ Handbook of Systematic Urinary Analysis, Chemical and Microscopical. For the use of Physicians, Medical Students, and Clinical Assistants. By Frank M. Deems, M. D., Laboratory Instructor in the Medical Department of the University of New York, etc. New York: The Industrial Publication Co., 1880. Pp. 30. ══ Hand-book for Coroners: containing a Digest of all the Laws in the thirty-eight States of the Union, together with a Historical Résumé from the earliest period to the present time, a guide to the Physician in Post-mortem Examinations, etc. By John G. Lee, M. D., Coroner's Physician of the City and County of Philadelphia. Philadelphia: William Brotherhead, 1881. Pp. 288. ══ A Treatise on the Principles and Practice of Medicine; designed for the use of practitioners and students of medicine. By Austin Flint, M. D., Professor of the Principles and Practice of Medicine and of Clinical Medicine in the Bellevue Hospital Medical College, etc. Fifth edition, revised and largely rewritten. Philadelphia: Henry C.Lea's Son & Co., 1881. Pp. 1150. ══ Medical Diagnosis, with special reference to Practical Medicine. A Guide to the Knowledge and Discrimination of Diseases. By J. M. Da Costa, M. D., Professor of Practice of Medicine and of Clinical Medicine at the Jefferson Medical College, Philadelphia, etc. Illustrated with engravings on wood. Fifth edition, revised. Philadelphia: J. B. Lippincott & Co., 1881. Pp. 924. [Price, $6.] ══ A Practical Treatise on the Medical and Surgical Uses of Electricity, including Localized and General Faradization, Localized and Central Galvanization, Electrolysis, and Galvano-Cautery. By Geo. M. Beard, A. M., M. D., and A. D. Rockwell, A. M., M. D., Fellows of the New York Academy of Medicine, etc. Third edition, revised by A. D. Rockwell, M. D. With nearly 200 illustrations. New York: William Wood & Co., 1881. Pp. xxx–758. ══ Cyclopædia of the Practice of Medicine. Edited by Dr. H. von Ziemssen, Professor of Clinical Medicine in Munich, Bavaria. Vol. IX. Diseases of the Liver and Portal Vein, with the Chapter relating to Interstitial Pneumonia. By Ponfick, Thierfelder, von Schüppel, Leichtenstern, Heller, and Jürgensen. Translated by Arthur H. Nichols, M. D., Hamilton Osgood, M. D., Edward W. Schauffler, M. D., and Walter Mendelson, M. D. Albert H. Buck, M. D., Editor of American edition. New York: William Wood & Co., 1880. Pp. viii–928. ══ A Manual for the Practice of Surgery. By Thomas Bryant, F. R. C. S., Surgeon to, and Lecturer on Surgery at, Guy's Hospital, etc. Third American, from the third revised and enlarged English edition. Edited and enlarged for the use of the American student and practitioner, by John B. Roberts, A. M., M. D., etc. With 735 illustrations. Philadelphia: Henry C. Lea's Son & Co., 1881. Pp. xx–17 to 1005, inclusive. ══ Syphilis and Marriage. Lectures delivered at the St. Louis Hospital, Paris. By Alfred Fournier, Professeur à la Faculté de Médecine de Paris, etc. Translated by P. Albert Morrow, M. D., Physician to the Skin and Venereal Department, New York Dispensary, etc. New York: D. Appleton & Co., 1881. Pp. xii–251. ══ The Bacteria. By Dr. Antoine Magnin, Licentiate of Natural Sciences, etc. Translated by George M. Sternberg, M. D., Surgeon, U. S. Army. Boston: Little, Brown & Co., 1880. Pp. 227. ══ A Treatise on Albuminuria. By W. Howship Dickinson, M. D. Cantab., F. R. C. P., Physician to St. George's Hospital, etc. Second edition. New York: William Wood & Co., 1881. Pp. xii–300. [Wood's Library of Standard Medical Authors.] ══ An Elementary Treatise on Practical Chemistry and Qualitative Inorganic Analysis, specially adapted for use in the laboratories of colleges and schools, and by beginners. By Frank Clowes, D. Sc. Lond., etc. With illustrations. From the third English edition. Philadelphia: Henry C. Lea's Son & Co., 1881.

Pp. 372. ===== Skin-Grafting in Chronic Suppuration of the Middle Ear. By Edward T. Ely, M. D. [Reprint.] ===== On the Operative Treatment of Hare-Lip. By W. I. Wheeler, M. D., etc. [Reprint.] ===== Myopia, etc. By Julian J. Chisolm, M. D. [Reprint.] ===== Restoratives. By J. R. Uhler, M. D. [Reprint.] ===== Chronic Bright's Disease in Children, caused by Malaria. By Samuel C. Busey, M. D. [Reprint.] ===== Sphygmograms, with Notes of Autopsies. By H. R. Hopkins, M. D. [Reprint.] ===== Cæsarean Section with Removal of Uterus and Ovaries after the Porro-Müller Method. By Elliott Richardson, M. D. [Reprint.] ===== The Development of the Osseous Callus in Fracture of the Bones of Man and Animals. By Henry O. Marcy, M. D. [Reprint.] ===== Bulletins of the Public Health, issued by the Supervising Surgeon-General. [Reprint.] ===== Anæmia in Infancy and Early Childhood. By A. Jacobi, M. D. [Reprint.] ===== The Treatment of Hip Disease. By E. H. Bradford, M. D. [Reprint.] ===== The Asylums of Europe. By George M. Beard, M. D., etc. [Reprint.] ===== Adenoid of the Rectum. Extirpation; Recovery. By Frank J. Lutz, M. D. [Reprint.] ===== Thirteenth Annual Report of the New York Orthopædic Dispensary and Hospital. ===== Eleventh Annual Report of the Manhattan Eye and Ear Hospital. ===== Ninth Annual Report of the New York Free Dispensary for Sick Children. ===== Report of the Albany Hospital for the two years ending January 31, 1880.

Clinical Reports.

MASSACHUSETTS GENERAL HOSPITAL.

Reported by J. Foster Bush, M. D.

ANTISEPTIC OPERATIONS.

STRANGULATED HERNIA; KELOTOMY AND OPERATION FOR RADICAL CURE.

(Service of Dr. CHARLES B. PORTER.)

The patient, aged twenty-six, had had a hernia since infancy, supposed to have been produced at that time by his being run over, and for which he had been accustomed to wear a truss. The intestine came down some days before his entrance, but was easily returned. Six hours before admission the gut came down again, and this was followed by vomiting and great abdominal pain. Before he entered the hospital repeated attempts had been made at reduction, both with and without ether, but had all proved unsuccessful. The tumor was of the size of a small cocoanut, fluctuating, and non-resonant. The patient, being etherized, was operated upon as follows: A fine trocar was introduced into the tumor, and several ounces of clear fluid were drawn off, as was supposed, from the scrotal sac. An aspirating needle was then introduced, and about two ounces of bloody fluid were withdrawn, which, however, had no fæcal odor. Taxis failing to return the gut, an incision about three inches in length was made over the inguinal canal, and the sac was opened. A loop of intestine eight or nine inches in length, of dark color and empty, was found. The constriction which prevented the return of the bowel was deep, apparently in the fascia transversalis, and the finger was with difficulty engaged in it. Cutting this constriction was only partially successful, and it was finally enlarged by dilating it with polypus forceps. The hernia was then returned without difficulty. It was found to be of the congenital variety, with the testicle exposed.

Operation for Radical Cure.—A portion of the sac, represented by a flap two and a half inches wide by three in length, with its pedicle at the external abdominal ring, was dissected free from its surroundings and folded upon itself till it made a mass about one inch square; two stitches of carbolized catgut were passed through it and tied, to retain it in shape, and then the mass was tucked into the inguinal canal and held in place by being stitched to the pillars of the external abdominal ring. A small drainage tube was put in, and the wound was closed with silk sutures. A Lister dressing was put on. The dressing was not changed for four days, during which time the patient was comfortable. Flatus was passed *per anum* after the first twenty-four hours. On the first day he had retention of urine. Beef-tea and milk were given in small quantities often. When the dressing was changed, it was found that union by first intention had taken place. The sutures and tube were removed, and the dressing was reapplied. On the tenth day after the operation, he had the first dejection, which was of a liquid character and unaccompanied with pain. On the eighteenth day a spica bandage was applied, over which was placed a Martin's rubber bandage, and the patient was allowed to sit up and have "hospital diet." Six weeks after his entrance he was discharged well, wearing a truss.

Several months afterward the patient was seen, and he stated that he had been a number of days at a time without a truss. There was no impulse on coughing, and he could jump from a table to the floor without the least feeling of weakness at the ring, and declared himself much stronger, and able to lift more without the truss than he could before the operation with the truss in position.

ANTISEPTIC OPERATION FOR RADICAL CURE OF VARICOCELE.

A man, aged twenty-two, by occupation a book-keeper, entered the hospital with the history of having had gonorrhœa the year before, in the course of which disease he had epididymitis on the left side. On recovery from the epididymitis he first noticed a tendency to varicocele. For the last three months he had suffered much pain in the left testicle, which was aggravated by standing or walking. He had been obliged to wear a suspensory bandage, which afforded some relief. Upon examination, decided varicocele of the left side was found to exist.

Operation under Ether.—An incision about two inches in length was made directly over the left spermatic cord, downward to the bottom of the scrotum; the vas deferens was isolated from the mass making up the cord, the varicose veins were dissected out from their bed and tied above and below with catgut, and the intervening portion, about two inches in length, was cut out. A drainage tube was inserted, and the edges of the wound were united with silk sutures. The operation was done with all the antiseptic precautions, under carbolic spray, and a Lister dressing was applied, extending well up upon the abdomen, back behind the nates, and half way down each thigh. Two days later the dressing was changed, under the spray, in order to give the patient a movement from the bowels. Three days later—five from the time of the operation—the Lister dressing was discontinued. The sutures were all taken out, and, as there was some gaping, the edges of the wound were drawn together with muslin tractors fastened with collodion. Two weeks from the time of the operation the patient was discharged from the hospital well, though he was cautioned to still wear the suspensory bandage.

It is now over six months since the operation, during which time the patient has been examined repeatedly, and as yet there has been no return either of the varicocele or of the pain, and he has discontinued wearing the suspensory bandage.

DIVISION OF THE ULNAR NERVE BY A STAB-WOUND.

(Service of Dr. CHARLES B. PORTER.)

A healthy man, aged twenty-two, was stabbed three and a half months ago through the forearm, with some sharp instrument, the exact nature of which he does not know. The point entered on the inner and posterior surface, near the middle of the forearm, just inside the inner border of the ulna, and came out on the anterior and outer surface an inch to the radial side of the median line of the arm. Following the injury, there was complete loss of sensation of the parts of the hand supplied by the ulnar nerve, to wit, on the anterior and posterior aspects, both sides of the little finger, and the ulnar side of the ring-finger. It might be thought that there would have been loss of sensation on the contiguous sides of the middle and ring-fingers posteriorly, but the ulnar nerve here generally receives a branch from the radial nerve, which would account for the sensation being intact. The paralysis of all the muscles of the hand supplied by the ulnar nerve could be easily demonstrated. *First:* The group of special muscles of the little finger forming the hypothenar eminence could not be contracted in the slightest degree; the palmaris brevis could not be made to corrugate the skin on the ulnar border, which was easily done in the other hand. *Secondly:* The muscles of the thenar eminence, supplied by the ulnar nerve, are the adductor and part of the flexor brevis pollicis, only one of which, viz., the adductor, could be demonstrated as paralyzed, and accordingly the man could not carry the thumb toward the middle line of the hand, except by strongly contracting the flexor longus proprius pollicis. *Thirdly:* All the interossei were paralyzed. Although he could flex and extend all the fingers with ease, he could not adduct or abduct them. There remain but two muscles supplied by the ulnar nerve, namely, the flexor carpi ulnaris and part of the flexor profundus digitorum manûs, and these were not affected, as they receive their nervous supply from above the point of section. The two muscles, flexor brevis pollicis and flexor profundus digitorum, receiving a double supply, manifestly would not be affected.

An interesting fact connected with this case, was, that three weeks after the injury the patient had a felon upon the little finger of the affected hand, during the whole course of which he did not have a painful sensation. When first seen, his finger was much swollen and red, and pus was discharging from the end, where there was a small opening which he had made himself. The incision caused him no pain. An amount of pressure which under other circumstances would have produced intense suffering, did not affect him in the least. The finger is now healed, but the resolution of the inflammatory products is taking place slowly, and only under constant pressure by strapping. There is as yet no improvement in the paralysis.

Proceedings of Societies.

NEW YORK ACADEMY OF MEDICINE.

A STATED meeting was held December 16, 1880, FORDYCE BARKER, M. D., LL. D., President, in the chair.

THE RELATION OF THE OVARIES TO THE BRAIN AND NERVOUS SYSTEM.—Dr. A. J. C. SKENE read a paper with this title, in which he said that there was an obvious lack of knowledge in regard to the share which individual organs of the sexual system contributed to the sum of influences exercised by them upon the brain and nervous system in health and disease. It was well known that one organ, and even one part of an organ, exerted a higher and better-defined influence upon the rest of the organization than another. For example, the cervix was less potential in affecting the nervous system than the body of the uterus, and the gynæcologist might wound, cauterize, or amputate the former without exciting violent pain or inflammation, but found less security from danger in dealing with the latter. He urged that the function of the ovaries was primary in the process of reproduction, and that the functions of the other sexual organs appeared to be responsive to the influence of the ovaries. He stated, however, that upon the last point there were differences of opinion. But he believed that all our knowledge concerning the influence of the ovaries upon the development of the individual, and the exercise of the sexual functions throughout the reproductive period of life, pointed to the conclusion that those organs were the prime movers in the sexual system. He regarded the uterus and vagina as superadded structures, rendered necessary by a more complex and perfect system of reproduction in the higher species. Dr. Skene accepted without qualification the statement made by Virchow and others, that the ovaries gave to woman all her characteristics of body and mind, and felt sustained in doing so by the fact that, when the ovaries were absent or defective from birth, the characteristics of the female sex were never fully developed. The tendency in the development of those in whom the ovaries were congenitally absent was toward the masculine type of the race. Among the authors who appeared to stand in opposition to this doctrine, Dr. Skene named Dr. Goodell, of Philadelphia, who in turn had quoted Battey, Hegar, Wells, and Peaslee as confirming his opinion. But the views held by the last-named authors, said Dr. Skene, were based upon observations made among mature women from whom the ovaries had been removed—a source of information which he believed was not trustworthy, because the results obtained up to the present time appeared to be quite variable. Those authors reasoned from the effects produced by the removal of the ovaries from mature women, while Dr. Skene reasoned from the facts observed in women born without ovaries. In view of this great potentiality of the ovaries in developing certain capabilities of the brain and nervous system, and in influencing their functions, Dr. Skene thought it was evident that, in order to maintain harmonious action of the whole organization, the ovaries must exist in full development and functional activity. From a somewhat extended study of the subject, he was satisfied that a great many affections of the brain and nervous system were due to disease of the ovaries. Among sixteen young single women who had come under his observation in a lunatic asylum, twelve had imperfectly-developed sexual organs; and the histories of the cases led to the conclusion that defective development of the ovaries was an important element in causing their insanity, although, no doubt, they inherited an insane diathesis. Dr. Skene felt convinced that conditions of the ovaries which deranged the menses affected the nervous system far more than dysmenorrhœa due to abnormal conditions of the uterus. He believed that displacements and inflammatory affections of the ovaries produced remote effects more grave than those due to disease of any of the other pelvic organs. It was often very difficult to determine the character of some ovarian diseases, and to estimate the effect exerted by them on the nervous system. All forms of morbid nervous phenomena might arise from causes other than disease of the sexual organs, and hence there were no constitutional symptoms that were diagnostic of ovarian affections. It became necessary, therefore, to determine, first, that disease of the ovaries existed, and then to estimate how far the nervous symptoms were dependent upon the local affection. There was, perhaps, no problem in gynæcology more difficult to solve than that of making a diagnosis in the cases of grave diseases of the nervous system, such as epilepsy and nymphomania, which had been presumed to be due to ovarian disease; and very much depended upon its correct solution. The majority of patients who had simultaneously ovarian disease and nervous affections required both local and general treatment. ═══ Dr. A. McL. Hamilton had met with many cases in which the ovaries had much to do with the production of nervous disease, not only indirectly, but in connection with the direct production of convulsive attacks. He also referred to an interesting rôle played by ovarian disease in the production of grave organic diseases of the spinal cord, the primary condition being an hysterical paraplegia. He had lately seen a case with Dr. Mundé, in which dislocation of the left ovary existed, with a most profound hysterical condition. Three or four years ago, the symptoms of primary sclerosis of the lateral columns were added to those already present. Dr. Hamilton was of the opinion that the ovaries played an important part, so far as epileptic and hysterical attacks were concerned, and alluded to the effect of pressure upon the ovaries in the latter. ═══ Dr. P. F. Mundé believed it to be important not to overlook the uterus, even if it proved to be true that its diseases were less frequently the cause of affections of the nervous system than were diseases of the ovaries. Oöphoritis very often gave rise to symptoms referable to the nervous system, and yet chronic inflammation of the uterus might cause similar, if not the same, symptoms when no disease whatever of the ovaries existed. Dr. Mundé thought Dr. Skene's statement, that the female did not become fully developed unless the ovaries were also fully developed, admitted of some doubt. There were several cases on record in which persons were perfectly developed, generally and locally, and yet had neither ovaries nor uterus. Dr. Mundé gave the histories of two cases in which reduction of a prolapsed ovary was promptly followed by an amelioration and soon by a complete disappearance of all nervous symptoms. Treatment, thus far, had been rather unsatisfactory. For the constitutional symptoms he had used chloride of gold and sodium with good results; also the bromides and electricity, especially where there was lack of development of the ovaries.—Dr. W. R. BIRDSALL referred to Röhrig's experiments upon dogs, which seemed to prove that the uterus was far more sensitive than the ovaries.—Dr. L. PUTZEL said he had made ninety post-mortem examinations of the bodies of persons who had died in a lunatic asylum, but that he was unable to recall a single case in which disease of the ovaries existed. He believed that, in many cases of epilepsy occurring with menstruation, an hereditary influence would give a more rational explanation of the occurrence of the convulsive affection than congestion or disease of the ovaries, the physiological condition of the ovaries acting each month merely as an exciting cause of the epileptic seizures.—Dr. SKENE, in closing the discussion, said, with reference to Dr. Hamilton's remarks, that he had always made a clear distinction between those cases in which there was organic disease of the ovaries and the nerve centers, so related as to make their interdependence certain, and those in which there was disease of the nervous centers with functional affections of the ovaries, the relations of which were difficult to diagnosticate. With reference to Dr. Mundé's remarks, there was no case in the literature of any country, so far as he knew, in which there was any evidence whatever of sexual characteristics in the absence of ovaries and testes. Therefore, the cases referred to by Dr. Mundé, in which glandular organs, like the testicles rather than like the ovaries, were found, favored rather than opposed his own doctrine that the mental and physical characteristics of sex depended for their development on the essential organs of reproduction. With reference to Dr. Birdsall's remarks, Röhrig's experiments were of great value as showing the possibility of demonstrating the relative influence which existed between the sexual organs and the nervous system. With reference to Dr. Putzel's criticism, he would say that the text of the paper plainly stated that he did not claim that the only cause of insanity in the cases cited was defective ovarian development. He also was sure that ovarian disease, as a cause of epilepsy, was of little account compared with transmitted peculiarities of organization. Regarding the large number of cases examined post mortem by Dr. Putzel, he would say that, although the Doctor found the ovaries apparently normal in structure, that did not prove that the sexual organs had nothing to do with the cause of the insanity. The ovaries might have been normal in structure but deranged in function during life in many of the cases. If his cases were all free from structural and functional diseases of the sexual organs they were certainly exceptional.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

A STATED meeting was held January 24, 1881, Dr. A. E. M. PURDY, President, in the chair.

A NEW METHOD OF PERFORMING OVARIOTOMY.—Dr. E. NOEGGERATH read a paper on this subject [see the February number of the "Journal," p. 145]. In the discussion, Dr. T. A. EMMET supposed the benefits of the antiseptic method in ovariotomy would not be doubted by one who had had experience in its use. Its advantages would appear from results obtained in Germany, and, more recently, in Italy. But the question naturally arose as to how its use might be simplified. In general surgery, the results attained without the use of the spray were, it seemed, about as good as with it, however carefully used. But he thought that in general surgery this success was due to deep and thorough drainage, which one could not get in ovariotomy, and he was therefore in favor of continuing, in all detail, the use of antisepsis in ovariotomy. He doubted not that a private dwelling, prepared as Dr. Noeggerath had suggested, would afford the conditions for success, although he could not speak from experience. The year before the introduction of the antiseptic method into the Woman's Hospital, and the use of a separate building for each patient, every case of ovariotomy ended fatally, nine in number; while during the following year—that in which the antiseptic method was first used—there were, he believed, thirty-three patients operated upon, and thirty recovered. In the first instance, however, when all died, the ill-success with this, as with other operations, was thought due in part to a defect in drainage; but to just how great an extent could not be told. His experience in the use of chloroform and ether differed from that of the author of the paper; he believed that ether in a long operation created less shock than did chloroform. Puncturing the cyst before opening the peritoneal cavity might be perfectly safe when the fluid in the cyst was of a bland nature, and where there were no adhesions to adjacent organs which might be displaced. A case had recently occurred where the bladder, being adherent, was transfixed, because it had been carried up toward the umbilicus in a locality where no one would have expected to find it. In another instance, he had found below the umbilicus the stomach and the colon adherent to the surface of the tumor, and, had an attempt been made to puncture the tumor before opening the abdominal cavity, the stomach must certainly have been transfixed; but such cases, it was true, were rare. It seemed to him that, with good assistants and with a little care, the escape of fluid into the abdominal cavity could be guarded against quite effectually, by making only a moderate-sized opening, placing the patient on her side, and having the tumor withdrawn as the fluid was emptied out; and at present that seemed to him the most favorable procedure. He was not yet decided in his mind as to which was the better, the metallic or the silk ligature for ligating the pedicle before it was dropped back into the abdominal cavity. The President would remember a case which he had put under his (Dr. Emmet's) care, where the silk ligature came out of the wound six months after its application; and another case had been reported to the New York Obstetrical Society, where the ligature came out by way of the bladder. Therefore, the most that could be hoped for was, in the case of either ligature, that it would become encysted and remain harmless. He had made use of the silver ligature in eighteen cases, and only employed the silk ligature with the hope that it might disintegrate and disappear; but it seemed evident now that it did not, but must remain as a foreign body. Dr. Keith now used the cautery instead of the ligature, but it had not yet been fully tried in this city. Dr. Keith had lost a number of patients before he learned to use it successfully, and Dr. Emmet confessed that he had not the courage to trust it, for fear of secondary hæmorrhage. Dr. Keith was now enabled to use the cautery with a success which far excelled that obtained with the ligature. But he was careful in addition to have all oozing arrested before closing the abdominal cavity. With regard to the drainage tube, many obstacles presented themselves; adhesions took place within a few hours, and these interfered with thorough drainage. At post-mortem examinations he had seen fluid which had become encysted within an inch of the tube, and could not be drained off. He did not know how these difficulties were to be overcome; even Dr. Sims's process of draining through the posterior cul-de-sac was very limited in its scope, and as long as a foreign body was present in the peritoneal cavity it would keep up a discharge by its presence. The glass tube, when resting on a surface from which adhesions had been separated, necessarily gave rise to some irritation, and produced oozing. If the India-rubber tube were used, adhesions forming about it were very apt to occlude it. We had, therefore, much to learn with regard to proper drainage. He considered the external application of cold water very grateful to the patient, and useful as an agent retarding the wear and tear, but he did not believe it would stop the progress of peritonitis. For lowering the temperature, his chief reliance would be upon quinine. He had had no experience with the warm bath applied in the way the author of the paper had described. —— Dr. Garrigues narrated instances in which, when antisepsis was thoroughly applied in cases of general surgery, the success much exceeded that which had been attained before it was used. The experience of the German gynæcologists in the operation of ovariotomy before the adoption of Listerism, showed that one half the patients died, but since its adoption their results were as good as those attained in other countries. He thought Dr. Noeggerath's suggestions as to disinfection of private rooms were excellent, and that it was in many cases a great advantage to be able to operate in the home of the patient. To the spray there was this objection, that it introduced foreign substances into the peritoneal cavity, and, as carbolic acid was the chief substance used, it might be absorbed, and cause carbolic-acid poisoning. Instances were known where it had caused death. It also lowered the temperature, which had been shown to be one of the elements in the production of shock. Many surgeons now made use of the Lister method with the exception of the use of the spray, and they said that their results were as good as or better than they were when they used it. Some of Lister's other instructions in the use of his method were often neglected, while the spray, the less important part, was used. Instruments were sometimes used which had not been dipped into the antiseptic liquid, much less allowed to remain long enough to become disinfected; and persons invited to the operation were allowed to thrust their hands into the peritonæum and examine it. It seemed to him, therefore, that, while the spray might be a useful part, it was also a dangerous part of Listerism, and that it was much more important that the instruments and the hands which were to come in contact with the tissues should be thoroughly disinfected. With regard to anæsthetics, he could not agree with Dr. Emmet in his preference for ether, and he did not think this was due altogether to national prejudice; for even in the United States, where ether was the favorite, there were many who preferred chloroform, and he was informed that in Baltimore chloroform was used almost exclusively. Chloroform had been used in Denmark since its discovery in 1846, not only in the capital but in the country, which is small and densely populated, where all cases of accident from the use of chloroform would be reported; and during these thirty odd years but one death had occurred from its use. During his stay in this city—five or six years—he had read of three deaths in New York or its immediate vicinity from the use of ether; and the speaker who had just preceded him stated in his book that he had lost half a dozen patients from the use of ether, because of the existence of kidney disease, which could not always be discovered during life. Since it had been shown that shock was due to two things—to lowering of the temperature and to mechanical injury, it of course became important to keep the patient warm, and to operate as quickly as possible with the least mechanical injury; and he could testify that dry warmth, applied in the manner indicated by the author of the paper, was very handy and useful, and made it pleasant to all in the room, and was much to be preferred to air overloaded with hot moisture. With regard to puncturing the sac before the peritonæum was opened, he spoke of one case in which this was done satisfactorily, the cyst containing fœtid matter, which was drawn off, carbolic-acid solution thrown in, the cavity washed out, and danger avoided. In another case the result was not successful, being the case in which Dr. Noeggerath, in puncturing the cyst, punctured the bladder; but in that case, he was satisfied, it could not have been avoided. Shortly afterward he saw a similar case in the hands of Dr. Thomas, who had to cut into the bladder. These tumors were sometimes rich in blood-vessels, and there was danger of puncturing the latter, as happened in the case alluded to, where there was a fearful hæmorrhage. He thought that, had the trocar not been used, but the peritonæum opened and the sac drawn out, this accident would not have occurred. The silk ligature had been found post mortem, two years after the operation of ovariotomy, encapsulated and perfectly fresh. It was not, therefore, absorbed. He was familiar with the application of cold water for the reduction of temperature, and he preferred dry cold, employed in the manner indicated by the author of the paper, to wet cold, as applied by means of Kibby's cot; for the latter method, when used any length of time, was not only unpleasant to the patient, but was depressing, much more so than dry cold, and interfered with the antiseptic treatment. ═══ Dr. JANVRIN believed fully in antisepsis, his opinion being based on considerable experience with it personally, and on observation of its use in others' hands. He preferred ether to chloroform as an anæsthetic in such cases, because he believed it occasioned less shock in prolonged operations, such as many of these necessarily were—limiting his remarks, however, to cases in which there was no kidney trouble. He favored tying the pedicle and dropping it back into the abdominal cavity. During the last fifteen years he had had occasion, in assisting the late Dr. Peaslee and Dr. Bozeman, and in cases of his own, to apply over one hundred ligatures to pedicles, and in only one instance had the ligature slipped—due probably to the fact that the pedicle and the other tissues of the body in this case were œdematous. He preferred the silk ligature, five or six separate strands, waxed or unwaxed—of course carbolized. It *did not become absorbed*, but became covered over with an exudation, and remained entire. *Nor did Dr. Peaslee ever claim that it was absorbed.* He did claim, however, that the catgut ligature was absorbed. He (Dr. Janvrin) had made a number of post-mortem examinations at a longer or shorter period after the performance of ovariotomy, and in no instance had he found the silk ligature broken up and absorbed, but simply covered over with lymph. He had never seen any cases in which inflammation or any other trouble had followed from the presence of the ligature, and he had kept watch of many patients long after their recovery from ovariotomy. He had not before heard of Dr. Noeggerath's method of operating, but he should think it an excellent method, particularly in the cases specially suited for it, as indicated by its inventor. There might be cases, in which the contents of the tumor were very thick, in which it would not be applicable. Adhesions, he thought, would not constitute an objection to it, for the strong adhesions were almost always situated posteriorly, attached to the spinal column and to the pelvis, and, in the usual method of operating, the contents of the tumor were withdrawn before an attempt was made to detach the adhesions. They could be detached, he thought, by Dr. Noeggerath's method as well as by the other. He had had no experience with the drainage tube introduced through the posterior cul-de-sac, but had always applied it through the lower portion of the opening in the abdominal wall, and mentioned one case in particular in which he operated upon a woman with an ovarian tumor weighing, with its contents, about twenty-five pounds. It was done at a hotel in the city, where he was enabled to carry out, as nearly as possible, such a plan as Dr. Noeggerath had suggested with regard to antisepsis. On account of extensive adhesions, about one fifth of the tumor had to be allowed to remain. It was clamped, and a drainage tube was introduced, through which it was washed out, and the patient recovered without untoward symptoms, only it took a number of weeks for the stump to heal. It was a well-known fact that drainage and washing out of the cavity of the abdomen after ovariotomy had been practiced in this country for the past twenty-five years or more by the late Dr. Peaslee (and by many others more recently), and to him more than to all others was the profession indebted for this method of overcoming septicæmia. Dr. Janvrin thought Dr. Noeggerath's method of placing the patient in a bath after the operation was carrying *to the extreme* this idea of washing out the abdominal cavity; and, in cases where the washing out was necessary, it struck him as an excellent method, provided the patient stood the prolonged bath without unfavorable symptoms arising from its use. ═══ Dr. **Chamberlain** had been much interested in the paper of Dr. Noeggerath. By the variety and novelty of the suggestions as to the accessories of the operation, it certainly deserved the title which the author had given it, "a new method of performing ovariotomy," or, more exactly, perhaps, "new methods in the performance of ovariotomy." At the late hour, he would not prolong the discussion; adding only, that, in witnessing one of Dr. Noeggerath's operations, and, during the reading of the paper, it had occurred to him that the use of rubber tubing as a syphon (after the manner which he had detailed in a paper read before the Medical Journal Association several years since) would materially increase the convenience of the surgeon and the advantage of the patient, since both the hot-water bed and the bath of the after-treatment could be kept at any temperature which the surgeon might desire, without any sudden shock or any mechanical disturbance of the patient. ═══ Dr. B. McE. **Emmet** agreed with preceding speakers as to the absolute good to be derived from antisepsis, and was quite in accord with Dr. Garrigues as to the inefficient or careless way in which it was often used. He held that it was necessary at times to use more than one spray apparatus in order to get the full benefit of the antiseptic method, especially in cases of large tumors; and he would call special attention to the want of care, quite common in hospitals, in using so-called antiseptic dressings which were old, and in which the antiseptic properties were almost wholly wanting. This would seem to explain the occurrence of sepsis in cases in which, apparently, all proper measures had been carried out, and in which the dressings had not been interfered with. There were other cases, again, in which it was known to be applied inefficiently, yet the patients did not seem to suffer for it, being of those who did well in spite of all adverse circumstances, seeming to be endowed with the power to resist septic influence, at least to a certain degree. In regard to the question of anæsthetics, chloroform he had seen used almost altogether in Europe, but in this country ether was chiefly used, and for the reason that it was less likely to produce vomiting, if the anæsthesia were not pushed too far. The patient might be put sufficiently under its influence, and yet not to a degree that would produce vomiting. He had been informed that 365 patients had been put under the influence of ether in the Woman's Hospital in the course of the last year, and that in none of them was there a bad result; and he was under the impression that the late Dr. Peaslee, in his work on "Ovarian Tumors," which had become a standard authority, mentioned that he had never seen vomiting result from the administration of ether *during* an ovariotomy, unless it was given within two or three hours of a meal, and that he had never seen a single case of vomiting produced by it *after* the operation. The portion of Dr. Noeggerath's paper which to his (Dr. Emmet's) mind was of most interest was that which related to drainage. This subject was still under judgment, and different operators had their own peculiar views respecting it. It seemed to him that a good rule to be guided by was, to avoid the drainage tube in every case in which we were satisfied we had exercised every possible care to avoid sepsis, and had rendered antiseptic any fluid which might escape our efforts at removal. Many cases he had seen get along perfectly well for days, not even necessitating a change of dressing, which yet seemed to take an unfavorable turn, due apparently to the presence of the drainage tube; and he mentioned one case in particular which was most satisfactory until after the inspection of the drainage tube on the fifth day. There was a slight amount of bland serum removed, but in six hours after there were febrile symptoms, and evidences of poisoning developed which could not be overcome, and the patient died. In establishing drainage he would still select the anterior incision. Drainage through Douglas's cul-de-sac, as originally advocated by Dr. Sims, was open to the objection that all the collected matter could not be carried off, as we often found material in the flanks, or encysted elsewhere; besides which, from effusion of lymph, the tube was liable to become occluded, though the latter difficulty, it would seem, might be avoided by using the tubing introduced to our notice by Dr. Noeggerath. The speaker agreed with Dr. T. A. Emmet regarding the value of quinine in these cases, and, in the care of patients for him, he had administered the drug throughout the entire time, its administration even beginning some days before the operation, so as to have the patient cinchonized and kept so until convalescent; and he thought its advantage over cold in the after-treatment lay in the fact that the patient was continually somewhat proof against sepsis, while, once we were called upon to make use of cold as a febrifuge, sepsis was already in full force.——Dr. Noeggerath, in reply, said he thought the question raised by Dr. T. A. Emmet, as to which was the best material for ligature, a very proper one. He had known the ligature to come away with the passages through the bowel. Similar cases had been reported by other ovariotomists; and it sometimes gave rise to severe inflammatory reaction some time after the subsidence of the reaction following the operation. He was not yet decided in his own mind as to what was the best material for the ligature, but he had not had much experience with the silver-wire ligature, using silk usually, because it could be tied easier and more securely. It was not alone by the shape of his drainage tubes that Dr. Bardenheuer was enabled to attain his excellent results in important operations, as excision of the rectum, of the uterus, of ovarian tumors, etc., but by his whole method of disinfection, as by thoroughly washing out the cavity with salicylic acid during and after the operation, etc. When the tube became clogged, he noticed an elevation in temperature. He cleaned it out with a disinfected goose-quill to remove the large fibrinous clots, and afterward injected a solution of salicylic acid in water. The patients were kept in a half-sitting posture, to allow the secretions to collect at the lowest points.

Reports on the Progress of Medicine.

QUARTERLY REPORT ON GENERAL MEDICINE.*

No. V.

By W. H. KATZENBACH, M. D.,
ATTENDING PHYSICIAN FOR DISEASES OF THE CHEST TO THE OUT-DOOR DEPARTMENT OF BELLEVUE HOSPITAL.

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2. Councilman, W.—A contribution to the study of inflammation as illustrated by induced keratitis. "Jour. of Physiol.," iii, 1, 1880.
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4. Cavafy, J.—Amœboid movements of the colorless blood-corpuscles in leukæmia. [Roy. Med. and Chir. Soc.] "Brit. Med. Jour.," Nov. 13, 1880.
5. Starr, L.—On wasting or "simple atrophy" as it occurs in young children from insufficient nourishment. "Phila. Med. Times," Nov. 6, 1880.
6. Monti.—Beiträge zur Lehre der künstlichen Ernährung der Säuglinge. "Arch. f. Kinderheilk.," ii, 1–2, 1880.
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20. Petrone, L. M.—Contribuzioni sulle artropatie subacute dipendenti da una lesione del cervello.—Zone trofiche cerebro-corticali. "Sperimentale," Nov., Dec., 1880.
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22. Southey, R.—Clinical lecture on the interdiagnosis of insensibility from various causes. "Lancet," Dec. 4, 1880.

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* I am indebted to Dr. George T. Jackson for assistance in the preparation of this report.—W. H. K.

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6. In this contribution to the study of the *artificial nourishment of infants*, Dr. Monti reports a series of observations upon the use of Biedert's artificial food (cream mixture). He says that even diluted cow's milk contains so much casein as to make it hard for the child to digest; further, that a certain amount of fat is essential to the digestion of bovine casein, and in diluting the milk the proper proportion between the casein and the fat is disturbed. Biedert's artificial food consists of white of egg, sugar of milk, cane sugar, butter, and salts. Of this, one teaspoonful is dissolved in sixteen tea-

spoonfuls of warm water and given to the infant, cow's milk being added by the teaspoonful as the child grows, the amount of it to be added being determined by the child's ability to digest it. The author has tried this mixture in thirty-three cases, and under the following conditions: 1. As the exclusive food of new-born infants, to test its quality as nourishment. 2. In cases where infants have been artificially nourished, and have lost flesh on account of intestinal troubles, to test its nourishing quality in sick children. 3. As a dietetic means to overcome some intestinal trouble. 4. In children nursed at the breast, but not thriving, in which cases it was administered with the breast milk. 5. Given to recently weaned children, who did not readily digest cow's milk. The following results were reached. In the first series, of five cases, an increase of body weight was found in all, but in two infants it was not well borne. In the second series, of six cases, all the children were under three months old, with acute and chronic intestinal troubles and marked emaciation. Within from six to seventeen days after administering the mixture all the intestinal troubles were overcome, and the children gained in weight; but, on continuing the mixture for some months together, in two of the cases slight enteritis occurred, but did not end fatally. In the third series, of fifteen children, eleven were less than four months old, and of the whole number thirteen recovered and two died. In the fourth series, of three cases, the results were most satisfactory, the children gaining in weight, though in two cases transitory dyspepsias were observed. In the fifth series, of four cases, all showed the best results.

7. The discussion was opened by Dr. Hilton Fagge, who said that, in connection with *rickets*, there was too great a tendency to base our definition of the disease upon local rather than upon general symptoms. He had lately seen a child that had died of broncho-pneumonia, and who had a well-marked pigeon-breast. The practitioner attending the case had thought the pigeon-breast was entirely due to the condition of the lung, whereas, after death, abundant evidence of the existence of rickets was found. He himself doubted whether pigeon-breast ever occurred in non-rickety children; but, on the other hand, he questioned whether it would occur in rickety children without pulmonary affection. It was difficult to settle questions of this kind positively, because of the impossibility of denying the existence of rickets, even in children with no outward manifestation of the disease. Many children, apparently healthy, were found after death to have rickety changes. There was a strong probability that syphilis and rickets might stand to one another in the relation of cause and effect, but rickets might be due to many other causes besides syphilis. Rickets was certainly a general disease, for, although the non-bony symptoms might separately be thought to be trivial, yet taken together they were very significant. As regarded the occurrence of albuminoid change in the organs in rickety children, he was inclined to agree with Dr. Gee that this change was due to the same cause that produced the rickets, rather than to the rickety condition itself. He thought the same thing applied to the prodromes of the disease: the chronic diarrhœa, the tumid abdomen, sickness, drowsiness, etc. The really important general symptoms, which might be looked upon as part of the disease, were: 1. Sweating at night; 2. Restlessness at night; 3. The general tenderness of the body. It had been proved that the skulls of rickety children were not abnormally large; the skull was of about the same size as in other children, but the face was small, and hence the appearance of a large head. He did not think that hydrocephalus was confined to rickety children, as was often stated. On the other hand, he thought that laryngismus stridulus was an essentially rickety symptom. In one case in which a child had attacks of laryngismus stridulus, without any symptom of rickets, a subsequent attack of broncho-pneumonia had caused a falling in of the ribs, proving that rickets was really present. In opposition to the view that the rickety condition of bone was due to a general change in the bone itself, was the fact that the striking change was not in the main body of the bone, but in its surface, just beneath the periosteum. Under etiology, one point of importance to note was, that if rickets were due to anti-hygienic conditions solely, we had no right to call it a diathesis, like scrofula or tubercle. The relation between rickets and tubercle

was one of great interest. He believed that tubercle might arise from anything which lowered the bodily health, and hence rickety children ought to sometimes, and indeed did, become tubercular. ═══ Dr. David Lees read a paper, drawn up by Dr. Barlow and himself, on *cranio-tabes* in its relation to syphilis and to rickets. Of one hundred such cases tabulated, in forty-seven instances there were satisfactory proofs of the presence of syphilis. With respect to the symptoms accompanying cranio-tabes, the authors had failed to discover the restlessness, rolling about of the head, or profuse sweating about the head. Head-sweating was sometimes present, but never to a great extent. Convulsions had been rare. In conclusion, the authors stated their belief that syphilis was by far the largest factor in the production of cranio-tabes; whether it was or was not related to rickets, must depend upon the relationship between syphilis and rickets. The authors presented a table of fifty-three cases, in which rickets was more or less obviously present, which tended to show that rickety manifestations bore a definite relation to diet. Even if it could be proved that cranio-tabes was the first sign of rickets, that would in no way invalidate the proof that cranio-tabes was itself the result of syphilis; the only conclusion would be that syphilitic children were specially apt to become rickety; although on this point the authors thought that, as yet, there was no certain proof that syphilis *per se* was the cause of rickets.

11. Dr. Fowler, his attention having been called to it by Dr. Garrod, has lately kept notes of all cases of acute and subacute *rheumatism*, and finds that in a very large proportion the attack has been preceded, at an interval varying from nearly a month to a few days, by some *affection of the throat*. It may be a simple catarrh, but in many cases it takes the form of acute inflammation of the tonsils. The percentage of cases was about eighty. In some cases the throat and joints are affected simultaneously; and he has met with cases of relapse from acute rheumatism, where the primary attack and the relapse have both been preceded by throat symptoms. The sequence of events is of too frequent occurrence to be explained on the hypothesis of a merely casual connection; that is, that a person having, through a chill or some other cause, had a "sore throat," further exposure has brought on an attack of rheumatic fever. He believes that not unfrequently amygdalitis is an early manifestation of the rheumatic diathesis, and that by so regarding it we may prevent the further development of that tendency. Bearing in mind the extreme prevalence of valvular affections of the heart, which in the young may generally be traced to fibrinous vegetations having formed on the valves during an attack of rheumatism, any means which enable us to foresee and possibly ward off a disease causing agonizing pain, and often leaving behind it an irreparably damaged heart, are of great value. Early treatment is very important in acute rheumatism. The cardiac complications usually appear early in the case, and when once the patient has been got to bed the danger from that source is much lessened. So firmly is the author convinced of the truth of these facts, that he thinks seriously of a seemingly trivial throat affection, and in all such cases advises his patients to be on their guard against the slightest subsequent exposure to cold, and to seek medical advice on the first appearance of pain in the limbs or joints. Brief notes are given of twenty cases of acute rheumatism recently under observation, in nineteen of which the articular affection was preceded by sore throat, and in one the throat and joints were affected simultaneously.

28. According to Dr. Dowse, "every case of *locomotor ataxy* (with very few exceptions) can be traced to a *syphilitic origin* if due care be taken to inquire carefully into the patient's history." A prolonged first stage in locomotor ataxia is rather against than in favor of its being of syphilitic origin. Out of twenty-three cases of this disease recorded by the author, seven have existed almost stationary in the first stage with ataxy for a series of years varying from eight to fourteen; whereas in the remaining sixteen cases, where there has been a clear history of syphilis, the troubles of the second stage, and even of the third, with ocular paralysis and vesical and gastric crises, have come on in from two to five years. In nearly every case of locomotor ataxia the ataxic gait is preceded by fulgurating pains. The distinction is drawn between the severe pains of a deep-seated character which are associated with the ataxic gait, and those slighter pains which are so evanescent and resemble that from a sharp needle or lance thrust into the skin, and which frequently seem like a neuralgia in their nature, and which may exist for years before any ataxia becomes evident by objective signs. The following signs are diagnostic of the *pre-ataxic* stage of locomotor ataxia: Inequality of pupils; small pupils; paresis of the left third nerve; cutaneous, fulgurating pains; sexual excitement; transitory incoördination of the lower limbs; variable patellar tendon-reflex, never absent; spinal irritability; dysæsthesia; anæsthesia; hyperæsthesia; visual color changes; gastric and intestinal crises; temperament variable; retinal changes; mental depression; insomnia. Of these signs the most reliable one is the fulgurating pains. They are not limited to the lower limbs; they may attack the head, the nose, ears, shoulders, buttocks, and even the scrotum and penis; but, as the disease advances and the ataxia becomes decided, the legs alone are the seats of pain. They occur, for the most part, singly, and the patient has scarcely time to rub one part of the body before his attention is called to another part. These fulgurating, cutaneous pains and plantar and dorsal limited anæsthesia are infallible signs of the pre-ataxic stage of a locomotor ataxia. Inequality of the pupils should not be overlooked. Dr. Dowse feels sure that functional absence of knee reflex will be found to exist in the pre-ataxic stage; and that this, if it be found to be correct, must be an invaluable guide to a definite and curative course of treatment of what is now thought to be an incurable disease. In cases of so-called nervous dyspepsia and biliousness, with incoördinate movements, we must determine whether the knee reflex is absent or not. Several cases are cited which illustrate the pre-ataxic stage of locomotor ataxia, and the results of treatment. In concluding his paper, the author says: "I will never concede to the opinion expressed by many and taught by most, that a locomotor ataxia is an incurable disease, for there is a stage of this disease, which I now call the pre-ataxic stage of a locomotor ataxia, when by prompt and energetic treatment we may safely hope for good and successful results."

37. Dr. Bauduy thinks that his practical observations in the *treatment of alcoholism*, in over eight hundred cases, prove that, 1. Acute alcoholism is a self-limiting affection. 2. Acute alcoholism results not from sudden withdrawal but from excess and abuse of alcoholic "so-called stimulants," better called sedatives and narcotics in the doses in which they are taken. 3. The expectant plan of treatment is the most rational. 4. Opiates are dangerous because they additionally derange digestion, and, acting as powerful cardiac sedatives, tend to paralyze the heart, and finally, because they check elimination and interfere with the normal secretions and with digestion. 5. Sleep is never to be produced at risk or hazard to the patient, but is to be expected as one of the harbingers of a convalescence not to be forced. 6. In acute alcoholism, as in many other acute diseases, the *vis medicatrix naturæ* is fully adequate in most cases to produce the happiest results.

39. In this case of *asthma treated with faradization*, the patient, a gentleman about forty years of age, had suffered from paroxysms of the affection for more than six years, originally induced, he believed, by a severe attack of catarrh. Various remedies and climates had failed to give relief. While at the baths at Neuenahr, he was seized with an unusually severe and prolonged attack, which had lasted, with but slight intermission, for three whole days and nights, when, as all other resources had failed, it occurred to Dr. Richard Schmitz to try the effect of the induced current, as suggested by Dr. Max Schaeffer, of Bremen, each pole being applied just below the angle of the jaw and in front of the sterno-cleido mastoideus. The relief was immediate, and after twelve applications—i. e., an application twice a day for six days—the patient appeared quite well. His chest was examined carefully by Dr. Yeo, and there was no trace of wheezing, or of dry or moist râles of any kind. The current, mild at first, was gradually increased in intensity until it could be distinctly appreciated by the patient, as passing through the soft palate from one side of the throat to the other. It was continued for fifteen minutes at each sitting. It was noticed that the pupils, widely dilated at first, became strongly contracted as soon as the application of the current gave relief. Dr. Max Schaeffer looks upon the bronchial spasm as secondary to a swelling or tumefaction of the bronchial mucous membrane, dependent upon a fluxionary hyperæmia, itself due to a vaso-motor nervous influence, the principal rôle being played by the pulmonary fibers of the vagus. According to this view, asthma is an irritative and reflex pulmonary neurosis. Many patients are the subjects of nasal, pharyngeal, or laryngo-tracheal catarrh; and these morbid states of the structures adjacent to the nerve may influence and disturb the nervous currents. Tumors, enlarged glands, etc., may cause irritative pressure on nerve filaments connected with the respiratory centers; and all the symptoms of asthma are symptoms of irritation brought on by pressure on nerves which are in connection with the pulmonary portion of the vagus, and especially in the upper part of the respiratory tract. The nose and throat are carefully examined, and the electrodes applied according to the seat of the disease. In the case related above, the tonsils were enlarged, and the pharynx was in a state of follicular inflammation. The tonsils diminished in size, and the pharyngeal secretion was lessened, after the applications of electricity.

41. Dr. Althaus gives the following notes of a case of *diabetes insipidus treated with galvanization of the medulla*, with the result of affording relief. A gentleman, aged thirty-seven, single, had spent many years in the tropics, and suffered from persistent diarrhœa, which nothing would arrest. This ultimately brought on a state of complete cerebral exhaustion. The most troublesome symptom from which he suffered was polyuria, which was so bad as to exclude him altogether from society. When in company he could hardly sit still for a quarter of an hour without experiencing a most pressing desire to empty his bladder. The average daily quantity of urine amounted to ninety ounces, but often much more. It was feebly acid, of low specific gravity, and contained no sugar or albumen, nor any excess of urea. The application of galvanism lasted six minutes, and was entirely painless. The patient returned a week afterward. The quantity of urine had fallen to thirty ounces, and he was obliged to pass it but three times a day. As the patient has not been seen since, it can not be known whether the relief has been permanent.

44. Bäumler, in considering the *diagnosis of enteric fever from gastro-intestinal catarrh*, remarks that cases are not rare in which the question arises whether we have to deal with a mild case of enteric fever or simply with acute gastro-enteric catarrh; and it may sometimes, at least for a time, be a matter of great difficulty to arrive at a definite conclusion. He has never seen a case of true "gastric fever," i. e., a febrile catarrh as a *local* disease of the mucous membrane of the stomach, or, it may be, of the small intestines too, accompanied by pyrexia of about a week's duration or more, and by general febrile symptoms. In almost every case which might have fallen under the description of "gastric fever," the diagnosis of enteric fever could by and by be clearly established, or the pyrexia, of a remittent type generally, could be traced to some other *local* disease—of the lungs, for instance (commencing phthisis)—and the gastric disturbance, so far from being the cause of the pyrexia, was only a symptom of the febrile state, and disappeared at once with the abnormal blood-heat. In all cases, on the contrary, which, on closer and more careful examination, turned out to be either mild or abortive cases of enteric fever, or which gradually became fully developed into well-marked forms of this disease, there could be made out, mostly from the very beginning, *a decided enlargement of the spleen*—a symptom which clearly points to the infectious nature of a given disease, and the occurrence of which in a simple catarrh of the lining membrane of the stomach would be quite unintelligible, and, in fact, does not exist. This enlargement of the spleen is *the* symptom on which most stress must be laid in judging of such cases; for of all the symptoms of enteric fever, besides the pyrexia, this is the most constant, and is of more value for diagnosis than the pyrexia itself, inasmuch as a febrile state of exactly the same range of temperature, and running the same course as in a mild case of enteric fever, may be caused by some non-infectious local disease; whereas an enlargement of the spleen in an acute illness, unless caused by some disease of the liver, heart, or lungs, clearly points to blood-poisoning. In cases of common acute enteritis, which for a time, as to the general symptoms, very nearly resemble the cases in question, and in catarrhal inflammation of the gastric mucous membrane, in which the temperature may reach a higher point, enlargement of the spleen is absent. It has been shown that the ingestion of putrid meat may produce symptoms and tissue-changes in the intestines which may easily be confounded with those of enteric fever. It will in future be an important task to find out and more clearly define the relations which may possibly exist between enteric fever and cases of meat (perhaps also of milk) poisoning by still more carefully studying both the clinical and the pathological appearances, and by closely searching the etiology in such epidemics. It is not impossible that what we now can not but diagnosticate as "enteric fever" may yet include several distinct diseases. Having regard to the presence of an enlargement of the spleen, and its significance as a sign of the infectious nature of the disease, we can not help looking upon such a case as one very likely of enteric fever, and it will be the safest plan, until these doubtful cases can be more clearly distinguished, to treat it as such, but to carefully search its etiology, and to do whatever is necessary to prevent its spreading.

53. Dr. Bristowe considers the *treatment of enteric fever* under four heads: 1. Diet; 2. Medicine; 3. Alcohol; 4. Baths; and in concluding his paper says: "Let me state briefly the treatment to which I should like to be subjected if ever, unfortunately, I should become affected with enteric fever. I should like to be placed in a cool, well-ventilated room, and covered lightly with bedclothes; to have a skillful and attentive nurse to look after me; to be fed solely with cold milk, unless vomiting should demand the addition to the milk of medicine calculated to allay vomiting. If diarrhœa became troublesome, or ever there was much pain or tenderness in the cœcal rings and in the bowels, I should like to be treated, not with laxatives, but with opium, given either by the mouth or the rectum. If constipation were present, I should, excepting in the first week, like to have enemata only for its relief. In the event of intestinal hæmorrhage coming on, I should like to have ice to suck or ice-cold fluids to drink, cold compresses to the belly, and cold injections into the bowels; and, though I am skeptical as to their efficacy, I should still choose to have astringents, and more especially lead, given to me at short intervals. If perforation should take place, let me have large and repeated doses of opium. Stimulants I should prefer to be without early in the disease; later, however, and during convalescence, I should like to have them in moderation. As to the cold baths, I would rather not have them; but I would, nevertheless, leave it to my physician to exercise his discretion in the matter. I would leave it also for him to decide, according to circumstances, whether alcohol should be administered to me in large quantities. I should prefer not to be treated at a temperance hospital."

78. Dr. Baginsky, in his lectures upon *pneumonia in children*, says that, while in the adult we have to fear a failure of the heart, in children, on the contrary, failure of respiration is most to be feared. He quotes a series of observations by Beneke tending to show that there is much less pressure in the systemic circulation of children than in that of adults; and that, on the other hand, in the pulmonic circulation of children there is a much higher pressure than in that of adults. In the pneumonia of adults we have three grave factors: 1, an abnormal circulation; 2, increased contraction of the heart; 3, a lesion of the muscle of the right ventricle, due to the fever itself. But Lichtheim has shown that a large part of the lungs can be shut off from the circulation without increasing the pressure in the pulmonic circulation, and, as there is less pressure in the systemic circulation of the child, there is consequently less danger to be feared from the first factor in the pneumonia of children. On the contrary, in regard to respiration, the child has, in the normal condition, a much more rapid interchange of gases in his lungs than the adult, taking more oxygen, and giving up more carbonic acid. But the child's muscles of respiration are proportionately not nearly so well developed as the adult's, and, as they are called upon to make greater efforts at inspiration the more the pneumonic infiltration increases, the danger of their failure is much greater in the child than in the adult.

82. Dr. Thompson advances the proposition that *infective phthisis* (by which term may be designated that form of disease which results from the infection of phthisis) is a disease which has peculiar symptoms and signs of its own, serving to distinguish it from phthisis, and approximating closely to those of a pyogenic or infective pneumonia. Fifteen well-marked examples of this kind have come under notice, out of something like fifteen thousand cases of phthisis, so that the proportion of infective cases may be reckoned as not less (probably a little more) than one per mille; hence it is easy to understand why observers with a small number of patients should disbelieve the possibility of contagion. From the series the author rejects some cases which might have been included, but in which the symptoms were not so acute and distinctive, and which may eventually prove to be chronic or subacute forms of that disease which was manifested in an acute form in the fifteen selected cases. Grouping all the cases together and analyzing the symptoms and signs which characterize them, the following conditions are advanced as serving to identify the disease and to distinguish it from ordinary forms of phthisis: 1. A slight hacking cough appears to be the earliest symptom of infection, and, it is suggested, this is an indication of the irritation of the air passages due to the introduction of the *materies morbi* through their agency. 2. Symptoms of constitutional poisoning are at once shown by the rapid emaciation which is noticed by the patient in a very early stage of the disease. 3. As the disease progresses, rigors, accompanied by night sweats and pyrexia, occur at frequent intervals. 4. Later on, the cough returns, considerably aggravated, and the sputa are from time to time tinged with blood. Hæmoptysis occurs to a small amount, but is not frequently repeated. 5. The physical signs are usually bilateral, although not necessarily exactly uniform on both sides. 6. The pulmonary disease is disproportionate to the amount of constitutional disturbance, and is not sufficient to account for the extreme emaciation. 7. The physiognomy of the patient is not that of phthisis, and the color of the skin is of a dull sallow hue, far different from the pallor which is so marked a feature in the consumptive. With regard to the character of the physical signs, even after the patient has been ill for many months, Dr. Thompson has generally not been able to make out more than a few subcrepitant or crepitant râles, diffused, and of a somewhat peculiar character, in both infra-clavicular regions; but one lung may be attacked before the other, and, consequently, in some cases, and late in the disease, a cavity may form. He relates the history of a case of this form of phthisis, which recovered under his care, and quotes the case of another, and independent, observer in which death occurred, and the microscopical examination of sections of the lungs indicated an infective pneumonia. Should further observation corroborate this evidence, it would, in the opinion of the author, lead to the conclusion that phthisis, in its power of communicating disease, must be looked upon not as a zymotic disease capable of sowing itself, and reproducing the same form of disease, with identical symptoms and signs, but rather as an ulcerative process capable of giving rise to pyæmia. With this view of the infection of phthisis, prevention might be expected from simple measures of hygiene, especially free ventilation of the patient's room.

89. The subject of *the influence of menstruation upon the progress of phthisis pulmonalis* is handled by M. Daremberg at some length in this article, which is quite rich in cases. The results of his studies in this direction are as follows: 1. The general congestion which takes place in all women at the menstrual period, in certain women of peculiar nervous excitability or in whom some obstacle exists to the uterine flow, may be the exciting cause of the development of phthisis. 2. When phthisis is established the general menstrual congestion may be the cause of simple, hæmorrhagic, or inflammatory congestion of the lungs, sometimes around the seat of old lesions, and sometimes in sound parts. 3. If at the period the menstrual molimen is present, showing the persistence of the ovarian function, and the flow does not take place, the pulmonary (and general) congestions are more intense and dangerous than usual. 4. If the menstrual flow persists after ovulation ceases, it becomes a cause of anæmia. 5. After the menopause is established periodic congestions need not be feared. 6. Sudden suppression of menstruation may be a cause of phthisis where a predisposition exists.

92. M. Ferrand, writing of the *vomiting in phthisis*, divides its causes into three groups, viz.: 1. Mechanical, occurring in the early stage and after eating, due to the successive shocks of coughing. 2. Gastric, occurring rather in the middle period, and due (a) to diminution of gastric juice, (b) to hyperæmia, (c) to spasm of the stomach,

(d) to gastric irritation, as from a deposit of tubercles. For the latter he recommends a milk diet, iodide of potassium in small doses, and vesication by means of tincture of iodine. 3. Central, occurring rarely, and in the advanced stages, due to irritation of the brain and especially of the medulla oblongata, by meningeal exudation and neoplastic growths. For this form he recommends chloroform, in three- to five-drop doses, directly after meals; and believes that nitrite of amyl will prove specially efficacious against this order of vomiting.

94. Of thirty-three patients having *phthisis, treated with chaulmugra oil* by Dr. Murrell, twenty-four were benefited, although in some instances the results were not very striking. The chaulmugra seemed to act first as an expectorant, and the cough was less troublesome. No improvement was observed in the physical signs, even after the oil had been taken for many weeks. Sometimes the loss of weight seemed to be temporarily arrested, but there was rarely any absolute gain. Several of the patients took the chaulmugra with benefit after they had ceased to improve on cod-liver oil.

95. This is a contribution to the study of *spasmodic constriction of the œsophagus* by M. Eloy, who gives a number of cases illustrating his text. He says that œsophageal spasm arises: 1. From uterine trouble, as dysmenorrhœa; 2. From dyspepsia of various forms; 3. From lesions of the pharynx, hyperæmias, or hyperæsthesias; 4. In a purely nervous way, upon the same principle as we find spasm of the urethra, the vagina, etc.; 5. From functional trouble due to some local affection of the muscles of the œsophagus, as after swallowing acids, etc. In some cases an hereditary tendency may be traced. In most cases the great predisposing cause is a very impressionable state of the nervous system, either hereditary or acquired. The spasms are reflex in nature, and it is requisite that both the œsophageal muscles and the nervous conductors should be intact. In some cases the matters swallowed are at once rejected. In other cases the intensity of the spasm varies with the matter swallowed, warm aliments being generally less liable to cause spasm than cold ones, which is the reverse of what occurs in organic constriction. Spasmodic stricture is more prolonged than the organic form. A cough is often present, when the affection is due to dyspepsia. In the spasmodic stricture the patients often loathe food, while in organic stricture they are always hungry. If the food is regurgitated convulsively and instantaneously, the spasm is in the superior third of the œsophagus; if it is kept down for a moment, the stricture is in the inferior part; if the vomiting comes after an accumulation of food and the formation of a pouch, the stricture is probably organic, though it may be due to paralysis of the œsophagus at the lower part. Sometimes a gurgling sound is heard at the time of the regurgitation. For treatment he recommends catheterism, dilatation, and electricity as the most efficient mechanical means, while internally he uses bromide of potassium, strychnia, belladonna, and morphia. The form of catheter makes no difference. He prefers the *pincet* of Broca. Either the induced or the galvanic current may be used. All local troubles, dyspeptic, uterine, etc., demand their special treatment.

100. In his remarks on *catarrh of the stomach in children*, Dr. Eustace Smith says that in the child we meet with every variety of gastric catarrh, from the severe acute attack with high fever, which is comparatively rare, to the more common subacute, non-febrile derangement, which is milder in character and quickly subsides. Even in children it is exceptional for acute gastric catarrh to be accompanied by pyrexia; therefore in cases where fever is a prominent feature in the derangement, the diagnosis is sometimes difficult—unless the attack recurs repeatedly at short intervals, when the diagnosis is more easy. Cases of recurring gastric catarrh of greater or less severity are far from uncommon; and these attacks, if the intervals between them are short, may exercise a very injurious influence upon the patient's health and general development. Children subject to such catarrhs become pale and thin, for their nutrition is constantly interrupted. Such are often supposed to be cases of consumption; and, indeed, if there be any inherited chest weakness, long-continued interference with nutrition, such as is produced by a frequent recurrence of these attacks, may go far to encourage the tendency to phthisis. Catarrh of the stomach, unaccompanied by fever, is perhaps the commonest derangement to which children are exposed.

It is a constant danger to hand-fed babies, and forms the chief obstacle to the rearing of infants. Most children suffer at times from what is called biliousness. For two or three days together they lose their appetite; mope and lie about; have a dull, pasty, or sallow complexion, and look dark under the eyes. They sleep badly at night, and are restless and irritable in the day. These are the symptoms of a temporary gastric catarrh, which interferes for the time with the digestion of food, but as it passes off leaves no ill consequences behind. But, when the attacks are frequent, digestion is weak in the intervals of comparative health, and nutrition becomes seriously impaired. Such children complain often of flatulent pains in the side, and may be subject to attacks of syncope from the upward pressure of the distended stomach against the heart. Their bowels are usually costive. These symptoms may be greatly aggravated by an injudicious dietary. If the child so suffering is supplied with an excess of fermentable food, he is kept in a state of chronic acid dyspepsia, which is a source of constant discomfort to himself and anxiety to his friends. He is cross and restless. This derangement is often the origin of nervous habits of children. Vomiting is not a common symptom in these cases, though sometimes a large quantity of sour-smelling fluid and mucus is ejected. Frontal headache is usually present, and often very distressing. The wearing periodical headaches of children are usually owing to this cause. The urine from time to time is loaded with urates, and in rare cases quantities of free uric acid are passed; the urine may contain a trace of albumen at such times. Such children waste perceptibly. The treatment is the same, whether the gastric catarrh assume the febrile or the non-febrile form. First, the existing derangement must be cured, and then its recurrence must be prevented. To cure the existing catarrh, all sources of irritation which may be keeping up the disorder must be removed. Acid mucus calls for the administration of an emetic dose of ipecacuanha wine; and, following this, tincture of nux vomica, with bicarbonate of sodium in water sweetened with spirits of chloroform, given two or three times a day, will restore the gastric mucous membrane to a healthy condition. Careful attention must be given to the food, fermentable articles being avoided, and the stomach must not be overloaded. The digestive powers should be strengthened by preparations of iron, and a mild aperient should be given every few days. Children who suffer from attacks of catarrh of the stomach or bowels should wear a broad flannel binder applied tightly to the abdomen, so as to reach from the hips up to the arm-pits. This should be considered as part of the child's ordinary dress, and be cast off at night with the rest of his clothes. The child's resisting power should be fortified by cold bathing. Syrups should be avoided in making medicines palatable to young children. Glycerine or a few drops of spirits of chloroform are better for sweetening purposes.

102. Dr. Filatov contributes a point to the *etiology and diagnosis of acute peritonitis in children*, which is, that straining of the abdominal muscles, notably the rectus abdominis, may give rise to a localized peritonitis, with great pain, vomiting, constipation, meteorism, and fever. He gives two cases to illustrate this, one in a boy and the other in a girl.

111. MM. Debove and Capitan report three cases of *sudden death in interstitial nephritis*, in all of which the autopsy showed only the lesions of the disease and hypertrophy of the left ventricle of the heart. One patient was found dead in his bed, and the two others died with symptoms of syncope.

QUARTERLY REPORT ON MATERIA MEDICA, THERAPEUTICS, AND TOXICOLOGY.

No. IV.

By GASPAR GRISWOLD, M.D.

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8. Dr. Desplats confirms the views already advanced by him with reference to the *antipyretic action of carbolic acid*, reporting thirteen more cases in which he has successfully employed it—ten of typhoid fever, two of variola, and one of remittent fever. He reiterates the conclusions reached in his previous communication, viz.: 1. That sufficient doses of carbolic acid were always efficiently antipyretic; 2. That a depression of temperature so obtained might be maintained or increased at will by a continued administration of the drug; 3. That doses previously considered dangerous might be taken with safety, and that patients might even take 8, 10, or 12 grammes (ʒ ij–ijss.–iij) daily for several consecutive days without unpleasant effects; 4. That it was best administered by the rectum, and that no single injection should contain more than 2 grammes (ʒ ss.). The author has now employed this treatment under so many different circumstances that he feels justified in further formulating that carbolic acid is a *sure* antipyretic; that it may be administered in pyrexia, no matter what the disease or the age of the patient, and in doses hitherto considered too large to be safe. As regards accidents liable to occur during treatment, he mentions: 1. *Too great depression of temperature*, sometimes almost simulating collapse: this is the result of too large a dose, is easily recovered from, and does not modify the course of the disease unfavorably; 2. *Convulsions* resembling those of uræmia: these last but a few minutes, are not serious, and are the result of too large a dose; 3. *Interference with the action of the kidneys:* the urinary secretion should be carefully watched. The author finds the *black urine* nearly always present during the treatment, and does not consider it necessarily a dangerous symptom. Albuminuria preexisting, he does not consider a contraindication to the use of the carbolic acid; he has seen one case in which albuminuria seemed to follow the treatment, but disappeared as soon as convalescence permitted the discontinuance of the carbolic acid. Polyuria is a frequent result, but ceases as soon as the medicine is no longer given. As regards the mode of administration, the author prefers rectal injections of from one to two grammes (gr. xv– ʒ ss.) every three or four hours. He states that within half an hour after such an injection the surface becomes flushed; this is followed by perspiration, in the course of which the temperature falls, rising again in a few hours. He does not ascribe the fall of temperature to the perspiration, since he has seen it equally marked in cases where no perspiration occurred. He considers that the antipyretic action is exerted through the nervous system in some manner which he is not able to explain definitely.

9. Dr. Withers, in a paper on *the sulpho-carbolates*, reports the results of treating a number of cases of scarlatina, variola, and acute amygdalitis. He describes the sulpho-carbolates of sodium, iron, and zinc as stable salts, almost tasteless, soluble to any extent, easily absorbed, and efficiently antiseptic. The author's theory of their action in zymotic diseases, so called, is simply that they constitute a convenient form in which to introduce carbolic acid into the blood—they are absorbed as sulpho-carbolates, and decomposed in the blood into sulphates and free carbolic acid. A report is presented of thirty-one cases of scarlatina and twenty-five cases of variola treated with no medicine beyond 10 grs. (5 grs. to children) of the

sulpho-carbolate of sodium in solution every two hours; the mortality being in scarlatina 9·7 per cent., in variola 8 per cent. Nearly half of the cases of scarlatina were malignant; a special amelioration of the throat symptoms was observed to follow the treatment. The author believes that the iron salt will prove more efficacious in amygdalitis; but he does not report any statistics with reference to the treatment of this affection. The local application of a two-per-cent. solution of the sulpho-carbolate of zinc to ulcers is advocated, but seems *prima facie* a rather roundabout way of carbolizing, since the author even here bases his claims for its efficacy upon the decomposition into sulphates and carbolic acid, the latter doing the work. The sulpho-carbolates have been employed by Ligertwood in typhoid fever and phthisis with "varying success."

10. In discussing the *advisability of administering iron in large doses*, M. Bayard first calls attention to the fact that the amount of that metal present in the blood of a man of average size is never greater than four grammes (ʒ j). The actual quantity of iron whose absence causes anæmia is therefore very small. He also alludes to some experiments described in the "Gazette des Hôpitaux" for June, 1877, in which it was shown that most of the iron administered by the mouth might be recovered from the excreta. From these premises he concludes that there is no advantage in administering iron in quantities far greater than the system can appropriate, and that the irritation of the alimentary tract caused by large doses is incurred without good reason. He therefore advises that iron be given in small quantities, the non-irritating preparations being preferred, viz., the tartrate, citrate, or albuminate. He suggests the dose of 0·05 gramme (about gr. j), twice daily, after the two principal meals; and feels sure that all the good effects obtainable from large doses may be experienced in this way without the same amount of digestive disturbance. [It is interesting to notice, in this connection, that the presence of iron in the excreta is proof simply of its non-assimilation, and not of its having passed through the digestive tube without being absorbed. This is shown by injecting the tincture of the chloride directly into a vein; most of the iron so introduced may still be recovered from the fæces, having gone the round of the circulation without being assimilated, and being then excreted by the liver.]

12. Mr. E. A. Schäfer, F. R. S., advises the preliminary *administration of atropia as a preventive against the cardio-inhibitory effects of chloroform*, on the following grounds: 1st. In some cases chloroform proves suddenly fatal before sufficient has been given to paralyze the respiratory center; this form of death is not the result of careless administration, but is probably due to cardiac inhibition through the pneumogastric nerves, occurring in an individual predisposed to the accident by idiosyncrasy. 2d. Atropia in large doses paralyzes the inhibitory action of the pneumogastrics upon the heart; in ordinary doses, it diminishes the excitability of that inhibitory action. An ordinary dose of atropia, therefore, would not prevent death from the excessive use of chloroform, but would materially diminish the chances of sudden death by cardiac inhibition.

15. Dr. Crombie advises the *combined use of morphia and chloroform in producing and maintaining surgical anæsthesia*, as the result of an extended experience. He considers that this expedient, originally proposed by Claude Bernard, has not received the attention which it deserves. At the moment when the administration of the chloroform is being commenced, one-sixth grain of morphia should be administered hypodermically. As a result of this precaution, the subsequent anæsthesia is quiet and sleep-like, and may be prolonged for an indefinite period with quantities of chloroform which would be quite inadequate under ordinary circumstances. The quantity of chloroform required is so much less that the dangers and inconveniences commonly incurred during and after prolonged anæsthesia are entirely avoided. In operations about the mouth and face, where the continued administration of an anæsthetic is inconvenient, the prolongation of the effects of the chloroform secured by the combination with morphia is especially advantageous. Of course the early cardiac paralysis of chloroform, before anæsthesia, is not prevented; but all the other dangers resulting from a too free or too long-continued administration are most happily escaped in this way. The author hopes that by observing the preliminary precaution of a hypodermic injection of morphia the use of chloroform may come to be considered as safe as that of its less agreeable rival, ether.

16. Dr. Ringer, as a result of experiments upon *an alkaloid of the garden tulip*, extracted for him by Mr. Gerrard, arrives at the following conclusions: 1st. Tulipine (the name proposed) is a muscle poison, like veratria, but is weaker. 2d. It destroys reflex action, probably through paralysis of the afferent nerves. 3d. Its action upon motor nerves is slight, if any. 4th. It affects the heart of frogs like veratria. 5th. It does not affect the pupil.

18. M. Dujardin-Beaumetz, discussing *irrigation of the stomach*, makes the following remarks: It is best performed with the "stomach siphon of Faucher," consisting of a flexible rubber tube, the end of which the patient soon learns to swallow (thus avoiding the excoriations apt to attend the introduction of a stiff instrument); the external end terminates in a funnel. Liquids may be simply poured into the stomach through the funnel; if the external end of the tube be then lowered before it has become empty, the liquid will run out of the stomach again, gently, by siphonage (in this way the danger is escaped of pieces of the swollen mucous membrane being sucked out through the tube, as has occurred where the liquid has been withdrawn forcibly by means of a pump). This operation may be repeated until the water which flows out is clean. Not less than a quart should be used at one injection; alkaline water is best, Vichy being very popular in Europe, and specially recommended by the author. In this way, once a day, the stomach may be washed clean of mucus and undigested remains of previous meals. Where the patients learn to use the tube skillfully, great benefit is experienced; the operation may soon be required only once in two days, then once in three days, etc. Cases of gastric catarrh and dilatation have been cured in this way which have defied other kinds of treatment. Everything depends upon the mental attitude of the patient.

21. In regard to the question of *casca bark versus digitalis*, Dr. Drummond reports the results of several cases in which both remedies were used. It will be remembered that casca bark, or erythrophleum guinense, was shown by the researches of T. Lauder Brunton to have very similar actions to those of digitalis, viz.: slowing and strengthening of the heart, increased arterial tension, and diuresis. Dr. Drummond has used both remedies in several cases of cardiac disease, and concludes that casca bark is less certain and less rapidly effective. Its effect upon arterial tension is, however, greater than that of digitalis. The author used a tincture of the casca bark, about one part in ten, in doses of five to fifteen minims three times a day.

22. To prove the uselessness of *Chian turpentine in the treatment of cancer*, Dr. Henry Morris reports the results of its use in eight cases of cancer of the female genital organs, and four in which the disease affected the breast. He states that he used turpentine recommended by Dr. Clay (thus removing the objection that the drug was not genuine), employed the formulæ of Dr. Clay (thus avoiding the possibility of non-assimilation of the drug on account of improper method of administration), and continued the use of the turpentine long enough to test fully its claims to curative power. The author has not been able to assure himself that Chian turpentine has any power to cure cancer. He finds that it is a very difficult medicine to take for any length of time, on account of its disturbing the digestion. The cases are given in detail. The paper is intended as an answer to Dr. Clay's communication to the "Lancet" of October 2, 1880.

29. Dr. Rennert has used *sclerotinic acid* in five cases of labor, and in a number of cases of uterine hæmorrhage from abortion, hæmorrhagic diathesis, etc. He has employed the preparation made by Merck, of Darmstadt, in a fifty-per-cent. aqueous solution, administered subcutaneously. These injections were painful, but the author makes no mention of suppuration. The dose of sclerotinic acid was about half a gramme (gr. vijss.). He was prepared to observe the results suggested by Nikitin's experiments upon animals, viz.: an increase in the force of the uterine contractions, without any tendency to *tetanus uteri*. Dr. Rennert has never seen any distinct, definite effects from sclerotinic acid, and considers it in every way inferior to ergot both in obstetrics and in gynæcology.

34. Dr. Robson recommends the use of *nitro-glycerine in acute and chronic Bright's disease, and in the vascular* *tension of the aged.* He reports four cases of chronic, and three cases of acute, Bright's disease, in the course of which the administration of nitro-glycerine was followed by benefit. In the chronic cases the amount of urine was increased, the quantity of albumen contained in it was diminished, and the dyspnœa, cardiac excitability, and heightened arterial tension were favorably modified. In the acute cases the blood, casts, and albumen soon diminished in the urine, and progression toward recovery was rapid. The author has had no opportunity to try the remedy where complete suppression of urine had already occurred. He attributes its therapeutic value to its marked effect in relaxing arterial tension. A one-per-cent. solution should be administered, in one-minim doses, every four hours, until a general flushing and a sensation of throbbing show that constitutional effects are being produced.

QUARTERLY REPORT ON VENEREAL AND GENITO-URINARY DISEASES.

No. V.

By EDWARD B. BRONSON, M. D.,
PHYSICIAN FOR SKIN AND VENEREAL DISEASES TO THE NEW YORK DISPENSARY.

1. Del Castillo y Domper, J.—Necesidad y deber que tiene el médico de conocer bien la patología venérea. "Gac. de Sanidad Militar," Nov. 25, 1880.
2. Ronaldson, W. D.—The non-specific treatment of gonorrhœa. "Specialist and Intelligencer," Nov., 1880.
3. Fenger, C., and Hinde, A.—The endoscope in the local treatment of chronic gonorrhœa, or gleet, and gonorrhœal rheumatism. "Chicago Med. Rev.," Dec. 5, 1880.
4. Lang, E.—Ueber die Häufigkeit und Frühzeitigkeit der syphilitischen Erkrankungen, etc. "Wien. med. Woch.," Dec. 11, 18, 25, 1880.
5. Erb.—Die Beziehungen der Tabes dorsalis zur Syphilis, und die daraus sich ergebenden therapeutischen Consequenzen. [Vers. dtsch. Naturf. u. Aerzte.] "Med.-chir. Centr.-Bl.," Nov. 26, 1880.
6. Rey, H.—De la syphilis suivant les races et les climats. "Ann. de Dermatol. et de Syphil.," Oct., 1880.
7. Brander, E. S.—On diseases of the Andaman Islands. "Edin. Med. Jour.," Nov., 1880.
8. Ripping.—Ueber die Beziehungen der Syphilis zu den Geisteskrankheiten mit oder ohne Lähmung. [Verein d. Aerzte d. Reg.-Bez. Aachen.] "Dtsch. med. Woch.," Dec. 25, 1880.
9. Bermann, I.—The fungus of syphilis. "Arch. of Med.," Dec., 1880.
10. Cantarano, G.—Contribuzione clinica alla sifilide pulmonare. "Giorn. Internaz. delle Sci. Med.," ii, 8, 1880.
11. Bergh, R.—Tilfælde af syphilitisk Neglelidelse. "Hospitals-Tidende," Nov. 17, 24, 1880.
12. Terrillon.—Traitement de la syphilis par les injections sous-cutanées de solutions mercurielles. "Bull. et Mém. de la Soc. de Chir.," Nov. 5, 1880.
13. Prickett, M.—An unusual case of congenital syphilis. "Lancet," Dec. 18, 1880.
14. Park, R.—Genital irritation, together with some remarks on the hygiene of the genital organs in young children. "Chicago Med. Jour. and Exam.," Dec., 1880.
15. Fournier, A. — Simulation d'attentats vénériens sur de jeunes enfants. "Union Méd.," Nov. 4, 6, 1880.
16. Morris, H.—Nephro-lithotomy. [Clin. Soc. of London.] "Med. Times and Gaz.," Nov. 6, 1880.
17. Le Fort.—Néphrectomie. "Gaz. des Hôp.," Nov. 27, 1880.

18. Coskery, O. J.—Three cases of probable rupture of the kidney. "Maryland Med. Jour.," Nov. 15, 1880.
19. Chiene, J.—Bladder drainage. "Edinb. Med. Jour.," Dec., 1880.
20. Billroth.—Ueber Lithotripsie und Vergiftung durch chlorsaures Kali. "Wien. med. Woch.," Oct. 30, Nov. 6, 1880.
21. Erdmann.—Blasenlähmungen. [Gesellsch. f. Natur- u. Heilk. zu Dresden.] "Dtsch. med. Woch.," Oct. 23, 1880.
22. Davies-Colley.—A case of villous growth of the male bladder successfully removed by perineal incision. [Clin. Soc. of London.] "Med. Times and Gaz.," Jan. 1, 1881.
23. Marcacci, G.—Di una cistotomia soprapubica per la estrazione di un neoplasma villoso della cavità vescicale. "Sperimentale," Oct., 1880.
24. Hussey, E. L.—Cases of retention of urine. "Med. Times and Gaz.," Dec. 25, 1880.
25. McGann, T. J.—Remarks on stricture of the urethra in connection with internal urethrotomy. "Lancet," Nov. 6, 1880.
26. Cooper, C. W.—Divulsion in stricture of the urethra. "St. Louis Courier of Med.," Dec., 1880.
27. Eldridge, S.—The "pathfinder," a new instrument for facilitating the diagnosis and treatment of strictures of small caliber. "Am. Jour. of the Med. Sci.," Jan., 1881.
28. Ranney, A. L.—Fistula of the urethra of the male. "St. Louis Courier of Med.," Nov., 1880.
29. Gross, S. W.—Chronic catarrh of the prostate gland. [Lecture.] "Med. Gaz.," Nov. 20, 1880.
30. Smith, T.—Abstract of a clinical lecture on chronic enlargement of the prostate. "Med. Times and Gaz.," Dec. 18, 1880.
31. Richter, U.—Operation der Hydrocele. "Dtsch. med. Woch.," Dec. 25, 1880.
32. Gould, P.—Varicocele, and its effects on the testicle. [Clin. Soc. of London.] "Brit. Med. Jour.," Dec. 4, 1880.
33. Grünfeld, J.—Endoskopische Befunde bei Erkrankungen des Samenhügels. "Allg. Wien. med. Zeit.," Nov. 16, 1880.

6. Rey gives a somewhat comprehensive sketch of the *geographical distribution of syphilis.* He claims that the statistics of the disease in different regions of the earth go to show that it has everywhere a very uniform character; that race and climate have less of a modifying influence than is generally supposed. A close examination has convinced him that, in those remote regions where it is reported that its development is remarkably rapid, the periods of evolution do not differ materially from those observed in France and other civilized countries. Everywhere, about forty-five days is the period that elapses before the constitutional symptoms manifest themselves. The only people who have thus far been found free from the disease are the inhabitants of Iceland, those of Central Africa, and those on the island of Sainte Marie, Madagascar; and the statements relating to these countries have not been sufficiently corroborated.

7. Mr. Brander has had an excellent opportunity for observing certain forms of *venereal diseases in the Andaman Islands*, as they affected the savage inhabitants, having been superintendent of a hospital on one of the islands. It was his opinion that the affections observed were syphilitic, and that the disease had been imported into the islands but recently. According to his account, it occurred as follows: "It would appear that some few years ago a certain convict petty officer was attached for duty to their 'home' on Viper Island. This man had syphilis, and communicated it to one or more of the women in that barrack. It seems to have spread with remarkable rapidity among the jungle tribes, and in a comparatively short time all those in the vicinity of this settlement had a large proportion of their numbers affected." When Brander took charge of the hospital, venereal cases were coming in very frequently, and he estimates that during the ten months of his superintendence from one hundred and fifty to two hundred were treated. These cases formed the most important part of the service, both "numerically and in the gravity of the symptoms."

The following is the description of the disease: "Such cases as I saw early, commenced, among the men, from an ulcerating sore at the edge of the prepuce and extending outward. In those cases more advanced, the whole *outer* surface of the penis was a succession of ulcers of various sizes, with some running into each other. In many cases I saw what to me was a new factor, viz., the scrotum and perinæum covered with sores of this nature. In one case I remember that the whole scrotum, most of the perinæum, and nearly all the penis were one continuous mass of ulcerated surface. In the women the sores on the labia were also of a rapidly spreading kind. . . . Although these large local sores were clearly due in great measure to want of cleanliness, yet the condylomatous growths so commonly found to result from want of that precaution were comparatively rare. I only remember two cases of the latter, both in men, though it was more frequent among the children congenitally affected. Suppurating buboes usually accompanied the sores, with pretty extensive ulceration, sometimes involving much loss of tissue." These were the principal affections, but "in some there were sores about the nose and mouth, in the latter case commencing as cracks. There were *two cases* of ulceration of the tonsil. I observed, moreover, a marked immunity from ulceration of the palate, fauces, larynx, etc. . . . In a few cases of mothers suckling children there was ulceration of the nipple." The most remarkable feature of the disease was "a peculiar, shallow, spreading ulceration of the skin. I never happened to have a case in hospital when this condition began, but I saw several shortly after, and the appearance was that of a shallow, spreading ulcer—without raised or punched-out edges—and apparently only involving skin tissue, with a tendency to spread indefinitely." Of eruptions, he only mentions an affection of the scalp, which is termed "syphilitic impetigo," or "syphilitic lepra," and "two cases of syphilitic varioloid, where the eruption was well marked on the face." The writer speaks with even greater vagueness of certain eye affections; for example, of a "syphilitic conjunctivitis," of "dubious iritis," of "syphilitic ophthalmia" in infants, where, but for the treatment, the contents of the eyeball would probably have been lost. Other evidences of congenital syphilis than this "ophthalmia" [which we strongly suspect was the ordinary ophthalmia neonatorum] were "snuffles" and condylomata. Convinced that the disease he had to treat was syphilis, the writer draws the conclusion that in this primitive outbreak of the disease upon a "virgin soil," where the initial lesion was a soft chancre, he has an argument for the unistic theory of syphilis. [The weakness of this argument lies in the premises. Supposing the disease to have been syphilis, we are not at all convinced that it originated in the manner alleged. There have been British settlements on the Andaman Islands for many years, and, in absence of evidence to the contrary, it is not unlikely that syphilis was imported among the inhabitants long before the event mentioned. But we are by no means sure the disease was syphilis, after all. The signs of constitutional disease are described so unsatisfactorily, and with such manifest lack of special knowledge of the subject, that we feel that any opinion as to what the disease really was would be mere speculation. We are inclined to think that the ulcerations were generally chancroids, which, occasionally, were associated with secondary syphilis, together with various local affections which were not venereal.]

9. The *germ theory of syphilis* continues to be attractive. The stir occasioned by Lostorfer's "corpuscles" had hardly subsided when Klebs announced the discovery of certain micrococci in the primary syphilitic lesion, which he was able to "cultivate" in a nutrient fluid, and with this germ-containing fluid succeeded in producing by inoculation upon a monkey a disease which he believed to be syphilis. The latest aspirant for honor in this field of discovery is Dr. Bermann, who not only describes germs in the initial lesion—which we presume to be identical with the micrococci of Klebs—but, by making sections at a little distance from the induration, has found both micrococci and "fungoid growths" in the lymphatic and blood-vessels. The lymphatics are most affected, where they adhere to the sides (most abundantly about the valves) and partly fill up the lumina of the vessels. The reason given why others have not found them is, that only the sclerosis itself has been examined. The germs are "small, strongly refracting bodies, and resemble those illustrated by Klebs." The nearer to the original lesion, the more prevalent are the micrococci or sporangia, while at a distance the more highly developed forms occur. These latter consist of "a network of fine, thread-like filaments, sometimes so thickly interwoven as to impede circulation more or less." It is by this interference with the circulation that he accounts for the production of the induration. His theory is elaborated so as to embrace all the subsequent lesions of the disease. The fungus increases and the germs multiply at the seat of original infection, and finally are swept off into the general circulation, to produce a similar train of effects wherever a new lodgment is effected. [The theory is simple enough, and would be very satisfying, could we but make sure of the potential germ. It has hitherto proved aggravatingly elusive. Dr. Bermann does not pretend to have made any examinations for it, except at the initial lesion. He does allude to the fact that Knapp, to whom he showed his specimens, had found filaments that resembled the fungi in hæmorrhagic retinitis, but regarded them as simple forms of fibrine. Moreover, it does not appear that the writer has examined a very large number of initial lesions. Still, every such endeavor to solve the enigma of the syphilitic poison is commendable—perhaps brings us nearer to the true solution.]

16. Mr. Morris reports an exceedingly interesting case of *nephrotomy for the removal of a suspected renal calculus.* The operation is termed "nephro-lithotomy," meaning "the removal, through a lumbar incision, of a renal calculus from a kidney in which the pelvis is not dilated, and which, but for the presence of the stone, is presumably healthy." The operation is to be distinguished from that in which the kidney is cut for the evacuation of fluid accumulated, and to which the name nephrotomy is properly applicable, and from cases where a stone is detected through a lumbar sinus, and simply cut down upon. The case was as follows: A girl, nineteen years of age, had for eight years been subject at times to pain in the right side, accompanied occasionally by a feeling of sickness, and, sometimes, vomiting. The symptoms became gradually more pronounced; the urine became dark-colored, and the pain was so severe as to necessitate her giving up her employment as a servant. She entered a hospital, and, after remaining a while, was so improved as to be able to return to her work. The trouble returned, however, and at length became so distressing that an operation was deemed advisable. At this time there was no swelling in the loin, though there was some tenderness. The urine had been bloody, though it contained no abnormal constituents other than blood, but at the time of the operation it was clear. The nephralgia was severe. An oblique lumbar incision was made down to the kidney, which being exposed, the right index finger was passed over its posterior surface, where something was felt faintly projecting over the renal substance near the hilus. The renal substance was incised at this point with a probe-pointed bistoury, and a mulberry calculus, of a triangular shape and weighing thirty-one grains, was extracted. The upper end of the ureter was not dilated, and, as the stone could not be felt, the pelvis of the kidney was not interfered with. The wound was brought together with three sutures, and a drainage tube was introduced between two of them. The patient made a good recovery. The urine ceased to flow through the wound by the end of the third week. At the time of writing, the patient was entirely well, with the exception of a sinus, an inch and three quarters long, which discharged a little pus. [This case shows, it is claimed, that a calculus can be extracted from an undilated kidney by a surgical operation without more risk than is amply warranted by the suffering and general disability which the operation is designed to remove. It certainly shows that the danger of hæmorrhage from incision of the kidney substance, which has heretofore been regarded as the chief objection to the operation, is comparatively trifling. Chiefly on account of this supposed danger, the operation has always been looked upon with disfavor, notwithstanding the fact that it is reported to have been performed successfully in one or two cases before. The reports of these cases, however, are somewhat indefinite, and lack confirmation. It is not improbable that the success in Mr. Morris's case will lead to a revival of the operation, which will ere long place us in possession of statistics sufficient for a proper estimate of its worth.]

17. M. Le Fort, at a recent session of the Académie de Médecine, related the history of a case in which he performed *nephrectomy*. The patient had received a wound in the right side, below the false ribs, which involved a division of the ureter. Abscess formed, which was opened and gave exit to pus, and after a time to urine also. An opening was made above the groin, and another in the lumbar region. Urinary fistulæ were established at these points. After a careful study of the case, the diagnosis of section of the ureter was made, with consequent intra-abdominal abscess. The patient was rapidly failing, and a fatal termination appeared imminent. In view of these circumstances, the operation of nephrectomy was at length decided upon. The operation was in exact imitation of that previously performed by Simon, of Heidelberg. A vertical incision was made from the eleventh false rib to the crest of the ilium, and at a distance of about four finger-breadths from the spines of the vertebræ. Having reached the kidney, it was found to be so enlarged that it was necessary to enlarge the opening by cutting through the twelfth rib. Even then it was found impossible to isolate the organ at its upper part, and it was decided to enucleate the cortical substance from the capsule. This was easily accomplished. A strong ligature was then passed over the kidney and drawn tightly about the hilus. It only remained to detach the kidney by a few strokes of the scissors. The patient bore the operation well, but on being removed to his bed was seized with severe pain in the abdomen, accompanied with vomiting. The pain continued and was worse during micturition. On the third day he died. At the autopsy a large purulent cavity was found outside the capsule of the enucleated kidney, from which two fistulous tracts led, one beneath the peritonæum to the opening in the back, and the other, which was long and sinuous, to the opening in the groin. The severed ends of the ureter were found opening into the thickened wall of the abscess. The renal capsule at its upper part was firmly adherent to the liver.

19. Chiene proposes a plan for effecting *continuous drainage of the bladder*. A gum elastic catheter is introduced, and fixed to the penis with sticking plaster. Care is taken that the eye of the instrument is just within the neck of the bladder. To this catheter an India-rubber tube was attached, of sufficient length to reach, without being strained, over the side of the bed to the floor. It then passes into a bottle. The bottle and tube are filled with carbolized water before the apparatus is attached to the catheter. A piece of glass tubing is sometimes introduced at some convenient point for observing the direction of the flow. By means of this apparatus a siphon action is established, the suction power of which will depend upon the height of the column of water, and the urine will be drawn off as rapidly as it flows from the ureters into the bladder. The bottle is allowed to overflow into a basin, which, as it fills, can be emptied without risk of displacing the apparatus. Care is taken that the fall be not too great, or the mucous membrane might be sucked into the eye of the catheter so as to plug it. This contrivance was adopted in the first place in a case of plastic operation to close a urinary fistula in the perinæum, for the purpose of preventing the urine from flowing over the edges of the wound. The author suggests that it may be employed to study the action of diuretics. He has used it with satisfactory results in cases of chronic cystitis, and believes it will take an important place in the treatment of this affection. He claims that it accomplishes the same end as cystotomy in these cases, and in a much simpler way. In the female bladder it does not work well, for the reason that air easily traverses the short urethra and destroys the siphon action. The writer has never found phosphatic deposits on the catheter, though it has been retained continuously for one and two weeks. He gives as the reason that the catheter does not lie in the urine as the ordinary retained catheter does, but the bladder is quite dry with the exception of two tiny streams which run from the mouths of the ureters to the catheter's eye. [The idea of continuous drainage of the bladder by a retained catheter is not new. Harrison, of Liverpool, recommends it after internal urethrotomy.]

20. In Billroth's paper, read before the Wiener medicinische Gesellschaft, six cases of *rapid lithotrity*, according to Bigelow's method, were reported. In one the operation lasted two hours. All terminated successfully. The chief aim of the paper is to point out the danger from ammoniacal urine in this, in common with other operations on the bladder, and to indicate the best measures for its relief. At the conclusion he describes a case, not included in the six above mentioned, where death resulted after the operation in consequence of large doses of chlorate of potassium. The writer maintains that it is the ammonia in the urine, either free or in combination with carbonic acid, which is the main source of danger in this operation. It is a direct poison to the tissues, and is alone capable of causing the peculiar inflammation of the vesical mucous membrane found post mortem in fatal cases. The inflammation is of a diphtheritic character, the prominent points of mucous membrane showing necrotic bits of tissue, with a covering of coagulated fibrine, constituting a true diphtheritic process. Experiments of Stricker, Simon, Menzel, himself, and others, are referred to, which show that ammonia is an acrid and virulent poison to the normal tissues; that urine which does not contain it may be injected under the skin with impunity, but that when ammoniacal urine is so injected the result is phlegmonous inflammation, gangrene, and septicæmia. After the operation of lithotrity the abrasions of the mucous membrane allow the ammoniacal urine to come in contact with the deeper parts—with the cellular tissue—to avoid which danger, the urine should always be rendered acid, if possible, before the operation is attempted. The rapid increase of ammonia and bacteria in the urine, often noted after crushing a stone, is accounted for by supposing that the calculus in its little clefts, cavities, or depressions, affords lodgment for urine charged with ammonia and bacteria, which on being liberated rapidly increase. So soon as the urine again becomes acid it clears, or, if it contains pus, this settles to the bottom of the test-glass, leaving the urine clear above. It is "not *absolutely clear*," though, but often shows a little cloudiness, which Billroth has found to be due to minute forms of bacteria, which he thinks are identical in nature with those which occur in the urine when alkaline, but are shriveled and undeveloped because they can not thrive in neutral or acid urine. In such cases he supposes that little colonies of bacteria remain in protected situations, such as between the vesical trabeculæ, whence they are not easily dislodged. For the treatment of ammoniacal urine, besides the usual "washing out" of the bladder, Billroth attaches much importance to the internal use of acids. Phosphoric and benzoic acids are most favored. It was while employing chlorate of potassium for the same purpose that the fatal accident occurred. The chlorate was used as recommended by Etlefsen, of Kiel, and had been employed in previous cases successfully. It is alleged that it has the advantage over the acids, not only in rendering the urine acid or neutral more rapidly than they, but also by virtue of an effect on the secretion of pus, which is not true of the acids. In the case described, in which death was attributed to its use, it had been given during three days in daily doses of 15 grammes [nearly half an ounce]—45 grammes [about 11 drachms] in all. ═══ In the ensuing discussion, Dittel reported ten cases of litholapaxy, the first two of which were performed by Sir Henry Thompson during a recent visit in Vienna. The operations were not all completed at one sitting, and in one, owing to difficulty in passing the evacuating catheter (a stricture being present), the aspirator was not used. Dittel's opinion is very decidedly favorable to the new method. He does not believe, however, that it will entirely supersede the cutting operations, which are better adapted for young children, or where the stone is encapsulated, or in the so-called "*Pfeifensteine*," where a process reaches into the prostatic sinus, preventing the passage of instruments into the bladder. ═══ Ultzmann reported two cases, and described an original aspirator, the peculiarity of which was that the catheter and aspirator were joined in the direction of their long axes, thus permitting easy rotation of the apparatus.

22. Mr. Davies-Colley describes the *removal of a villous growth from the bladder* through a perineal incision. The patient had suffered from hæmaturia for eight years, and had become very anæmic. There was a continual desire to urinate, and a feeling after urination as if something remained behind in the bladder. The hæmorrhage occurred sometimes before and sometimes after urination. No villous masses could be detected in the urine, nor when a catheter was passed were any such masses discovered in the eye of the instrument. No stone and no tumor could be felt, and the diagnosis was obscure. The usual incision for lateral

lithotomy was made, and the bladder was explored. After some searching, a prominence was felt on the left side of the fundus, with a cord-like process running from it, which being followed led to a free end, to which a soft, pinkish tuft of villi was attached. The process was drawn down and the pedicle was cut with scissors. There was but little hæmorrhage; the wound healed kindly, and two months after the operation the patient was perfectly well. The tumor grew from the posterior wall of the bladder at a point about three inches from its neck, and one inch to the left of the median line. It consisted of a fibrous stalk one sixth of an inch thick and two inches long, terminating by branching filaments which were from one half to three quarters of an inch long. These filaments contained capillary loops, invested by many layers of cylindrical epithelium.

27. The "pathfinder," devised by Dr. Eldridge, is a rather complicated *instrument for exploring the face of a tight urethral stricture.* It consists of tubes arranged one within the other, through which a whalebone bougie is introduced, and by different adjustments of the concentric tubes the bougie can be made to search for an opening at any point desired. The practical utility of the instrument remains to be tested.

Miscellany.

Campbell on Kumyss in Cholera Infantum.—Dr. Campbell relates ("Am. Jour. of Obstet.," Oct., 1880) four cases, types of a number in which kumyss was used. All recovered. He gives kumyss as a food, and not as a curative medicine. "It works best in cases where the temperature is above normal, from the fact that it must be given cold. . . . In administering it, the gas should be first expelled by pouring the contents of a bottle from one pitcher to another. Small doses should be given at first, the amount being gradually increased, and, when the stomach will bear it, barley-water may be used to quench thirst. Before returning to a full milk diet, it is better for a few days to use one of the prepared foods."

Midwifery among the Aborigines.—Dr. W. Thornton Parker, of Plymouth, Mass., writes to us as follows: "While Government Physician at the White Earth Reservation, I had several opportunities to notice the management of labor among the Chippewa Indians; and Hohl's method reminds me of the practice which I have often witnessed of the attendant midwife's placing the hand almost violently on the mouth of the patient during pains whenever they seemed to be "good," and omitting to do so when they were weak and powerless. On one occasion I found a woman in labor kneeling upon a blanket spread upon the floor, her arms resting upon a large pole carefully bound with cloth, supported at either end about two feet from the floor. This I was assured was the customary position in labor, and the pole had been carefully cut and prepared for this purpose, and had already assisted in several successful deliveries. Rupture of the perinæum seems to be a rare occurrence among the full-blood Indians, but among the more civilized half-breed women I was told that it was becoming quite common. The Indians send for the doctor only in rare cases, and object to operative interference. Upon my explaining the Vienna method of lateral incisions to one of the more intelligent midwives, she expressed hearty approval, and carefully examined the blunt-pointed bistoury which I brought with me from 'over the great sea.' In post-partum hæmorrhage, they attempt little to save the patient, and, upon my questioning the attendant who had been in charge of a young woman who bled to death after labor, she informed me that she supposed nothing could be done. I mentioned the case to the head chief, a very intelligent man, and he expressed his regret that I had not been called to save the life of the young woman; and at a council of the Indians, which took place shortly afterward, they were urgently advised by the chief to send for the paleface doctor, whose art was superior to their own old-fashioned ways. He urged this on the ground that the Indians were dying off too fast, and that everything should be done to save life and 'help stem the river of death, which was so rapidly carrying off his people.' In another case, one of foot presentation, an Indian medicine-man, who failed to extract the head, cut the body off as close to the head as possible, and *pushed the head back.* The neglected woman died, and it is needless to say that no surprise was exhibited at the doctor's procedure. The peculiarities of Indian treatment, in all departments of medicine, are interesting and often very instructive."

Army Intelligence.—*Official List of Changes of Stations and Duties of Officers of the Medical Department, United States Army, from January 14, 1881, to February 13, 1881.*—Vollum, E. P., Major and Surgeon. Granted leave of absence for six months on surgeon's certificate of disability, with permission to go beyond sea. S. O. 24, A. G. O., January 31, 1881. ═══ Greenleaf, C. R., Major and Surgeon. His leave of absence, granted him in S. O. 158, series 1880, from A. G. O., extended to May 1, 1881. S. O. 20, A. G. O., January 26, 1881. ═══ Williams, J. W., Major and Surgeon. Par. 9, S. O. 2, C. S., A. G. O., relating to him, is revoked. S. O. 20, C. S., A. G. O. ═══ Bentley, E., Major and Surgeon. Announced as Acting Medical Director of the Department until the arrival of a medical officer his senior. G. O. 2, Department of Arkansas, January 17, 1881. ═══ Coues, E., Captain and Assistant Surgeon. Having reported in person, is assigned to temporary duty in the office of the Medical Director of the Department. S. O. 1, Department of Arizona, January 3, 1881. ═══ Lippincott, H., Captain and Assistant Surgeon. Upon expiration of present leave of absence, to report in person to the Commanding General, Department of the Platte, for assignment to duty. S. O. 34, A. G. O., February 10, 1881. ═══ Girard, J. B., Captain and Assistant Surgeon. To be relieved from duty in Department of Texas by Commanding General thereof on receipt of this order, and then to report in person to the Commanding General, Department of Arizona, for assignment to duty. S. O. 14, A. G. O., January 19, 1881. ═══ Taylor, B. D., Captain and Assistant Surgeon. To be relieved from duty in Department of the East by Commanding General thereof on receipt of this order, and then to report in person to the Commanding General, Department of Texas, for assignment to duty. S. O. 14, C. S., A. G. O. ═══ Taylor, B. D., Captain and Assistant Surgeon. The operation of Par. 4, S. O. 14, C. S., A. G. O., as far as it relates to him, suspended until March 1, 1881. S. O. 20, C. S., A. G. O. ═══ Reed, W., Captain and Assistant Surgeon. To accompany Battery I, Second Artillery, from Fort Ontario, New York—abandoned—to Fort McHenry, Maryland, and then report by letter to these headquarters for further orders. S. O. 25, Department of the East, February 9, 1881. ═══ Gardiner, J. de B. W., Captain and Assistant Surgeon. Relieved from duty in Department of Arizona, to proceed to Baltimore, Maryland, and, on his arrival, report by letter to the Surgeon General. S. O. 34, C. S., A. G. O. ═══ Burton, H. G., First Lieutenant and Assistant Surgeon. Assigned to temporary duty at Fort Niagara, New York. S. O. 18, Department of the East, February 1, 1881.

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THE DIAGNOSIS OF CANCER OF THE RECTUM.

By CHARLES B. KELSEY, M. D.,
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Cancer of the rectum, like cancer elsewhere in the body, generally occurs in middle life or old age. There are, however, some interesting exceptions to this rule. Allingham * reports a case of encephaloid, in a boy of seventeen, under his own care; and another (variety of cancer not stated), under the care of Mr. Gowlland, in a boy not thirteen; Mayo † speaks of one at the age of twelve, and Godin ‡ of one at fifteen years; and Quain § quotes one, reported by Busk, at sixteen. After the age of twenty the cases increase rapidly in number. With regard to the relative frequency in the sexes, different statements will be found in the works of different writers, according to the experience each has had, and considerable reasoning has been indulged in to explain why the disease should be more common in the one sex than in the other. In a collection of one hundred and seven cases, I have found fifty in males and fifty-seven in females.

The locality in which the disease first appears varies. Quain says: "I have most frequently met with the lower margin of the deposit at the distance of from two to three inches above the orifice

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* "Diseases of the Rectum," London, 1879, p. 265.

† "Injuries and Diseases of the Rectum," London, 1833, p. 188.

‡ Mollière, "Traité des Maladies du Rectum et de l'Anus," Paris, 1877, p. 580.

§ "Proc. of the Path. Soc. of London," 1846–'7.

of the bowel. The part between that just indicated and the anus is next in order of frequency as the seat of the disease, and to this succeeds the lower end of the colon." * This perhaps expresses the facts of the case as well as they could be stated in a few words. The upper limit of the rectum, where it joins the sigmoid flexure, is a common site of the disease, and here it runs a more rapid course than elsewhere, and is more apt to be suddenly fatal on account of the increased liability to obstruction which the anatomical condition favors.

The great clinical distinction which is at once apparent is between the hard varieties of the disease and the soft ones. The latter break down, cause great ulceration and destruction of tissue, bleed, discharge, and in this way give rise to a certain set of symptoms; the former cause induration and contraction.

Of all the varieties of true cancer, the one most frequently met with is *epithelioma* (twenty-one out of thirty-four cases †), and this presents itself, here as elsewhere in the body, under two forms distinguishable with the microscope and clinically. The first (cancroid, lobulated epithelioma) contains the characteristic onion-like nests of squamous epithelium, and is the same form so commonly seen in the lip, though rarely about the anus. It has its point of origin at the anus, and not within the rectum, and begins as a hard, dry, warty nodule. It is slow in progress, covered at first with firm epidermis, and only begins to ulcerate late in its course. It seldom spreads far up the rectum, but tends rather to involve the integument, which it may destroy to an extent similar to that someimes seen in the same variety of disease about the face. In the other variety (cylindrical epithelioma), the cells are columnar, and the growth resembles in minute structure the mucous membrane from which it springs. This variety, on the contrary, chooses the rectum proper for its development, and is found above the internal sphincter. It is easily distinguished from the former, but not so easily from a scirrhus which has begun to ulcerate. It is softer than the other, more vascular, and therefore more prone to bleed and undergo extensive degeneration and ulceration; and it rapidly infiltrates surrounding tissues. Early in its course it is movable on the subjacent tissues, but it is seldom seen by the surgeon at this stage. At a later period it presents itself as a soft, friable mass seated on a hard, infiltrated base; ulcerated in spots, the edges of the ulcers being hard and raised. At this stage the growth will yield on pressure the well-known cancer juice containing cells and nuclei, and it may be difficult to distinguish it from a tumor which began in the submucous tissue as a hard mass, and subsequently underwent degeneration.

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* "Diseases of the Rectum," London, 1854, p. 245.

† Hecker, Schmidt's "Jahrbücher," 1870.

Next to epithelioma, *scirrhus*, or hard cancer, is the variety most frequently met with in the rectum. It arises, not, like epithelioma, in the mucous membrane, but in the submucous connective tissue; therefore in the early stages of its growth the membrane is found normal and movable over the hard mass beneath. When cut into it shows the characteristic, raw-potato-like hardness of scirrhus, and there is no distinct line of demarkation between it and the adjacent tissues. From the original tumor are often seen, and sometimes felt, hard fibrous bands spreading out in various directions, generally longitudinally in the bowel—the processes or claws from which cancer takes its name. These tumors may soften down in parts and slough or ulcerate away. When ulceration has begun, a cavity with an irregular outline is formed in the midst of the hard cancer tissue, from which issues a fetid discharge mixed with more or less blood and pus. Although a large part of the growth may die in this way and be discharged, the steady increase in the disease is not checked. Indeed, the growth often seems to be most rapid in the bed of the part which has been destroyed.

This form of cancer is said to be most apt to show itself first on the anterior wall of the rectum, near the prostate,* and "to increase most on the side of the chief arterial supply, and in that toward which, by lymphatics and veins, its constituent fluids most easily filter."† It spreads by infiltrating all the adjacent parts, eventually involving all the coats of the bowel, and extending both in surface and in thickness till, instead of appearing as a hard, movable spot under the mucous membrane, it involves a great part or the whole of the circumference of the rectum, inclosing it in a dense, contracting sheath. The hardness and contractility of this form of disease are the chief clinical facts upon which a diagnosis rests; and yet, leaving out of consideration the history of the case, it will often be impossible to distinguish between the gross appearances of scirrhus and those of simple fibrous stricture. I have now under treatment at the Infirmary for Diseases of the Rectum a case of stricture which I believe to be dysenteric in origin, in which the extent of the disease is fully as great as in any hard cancer I have ever met with, and yet which has been eighteen years in developing. After partial destruction of the cancer has taken place the diagnosis becomes easier, for simple fibrous strictures do not tend to follow this course.

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* Allingham, Mollière.

† Moore. See Bryant's "Surgery."

Encephaloid has its primary seat in the glandular tissue of the mucous membrane. It is inclosed in a capsule of connective tissue, from the internal surface of which spring trabeculæ which divide the mass into lobules. On section it may be comparatively firm or nearly fluid, and almost white or stained red with blood. It is often very vascular; large vessels may sometimes be seen on its surface, and large blood extravasations may be found in its interior. The name fungus hæmatodes has been applied to a variety of this disease in which, after the capsule has burst, the mass has protruded. The material composing it may resemble brain tissue (from which it is named), or it may be more spongy and shreddy, like placenta. On squeezing a section of the tumor a large amount of juice may be obtained, and this, when thrown into a vessel of water, is uniformly diffused through it, giving it a milky hue. This is given by Paget as an exceedingly valuable rough test of the nature of the growth. These cancers are rapid in their increase and may attain an immense size, fairly filling the pelvis. They quickly affect the neighboring lymphatics, and, when enucleated, speedily recur. The results of removal are, however, particularly favorable for a short time, as shown by the immediate improvement in the general condition of the patient and the disappearance of the cancerous cachexia. The extreme softness of the tumor, and the deceptive sense of fluctuation imparted to the finger, may cause a mistake in diagnosis, which may be avoided by the use of the aspirator, or even the hypodermic syringe. When the fluid thus obtained is examined under the microscope, it will be found to contain cells and nuclei with more or less blood.

In *colloid* cancer (alveolar sarcoma) the structure is essentially the same as in the last variety, except that the alveolar meshes are filled with a mucous, glue-like material, which in its most natural state is glistening, translucent, and pale yellow. This variety of cancer has its origin in the follicles of Lieberkühn, or the crypts which surround the rectum. It is not very rare in this part, and appears in the shape of large, lobulated, fungus-like tumors, which are soft and easily broken down. Under the microscope the mucous contents of the alveoli will be seen to contain cells of various forms, the most characteristic being large, round, and flat, with a nucleus and concentric laminæ. The growth rapidly infiltrates the surrounding tissues, and secondary deposits will often be found in the neighborhood of the original mass, the whole tending to undergo cystic degeneration. The malignancy of these tumors varies in degree, some of them being comparatively benign; they do not always recur after removal, nor do they readily infect the lymphatics and viscera, being in this respect about on a par with epithelioma. The term colloid is used without much exactness, being applied to almost any growth which consists in part of large, cellular spaces filled with glue-like material. The following description of a case illustrates very perfectly the general characteristics of colloid:

The patient was an old woman, and the case was peculiar in that the colloid material was contained in cysts of various sizes, pressed firmly one against the other, so that the disease might be called multiple cystic colloid degeneration. The anus was surrounded with a large number of tumors of unequal size, of which several, larger than the rest, were surmounted by smaller ones in such a way that the anus occupied the bottom of an extremely deep infundibulum. Two superficial ulcerations were to be seen at the margin of the anus. The finger recognized at a short distance above the anus an ulceration in the form of a zone, which was deep, had destroyed all the thickness of the rectum in a part of its circumference, and communicated with fistulous tracts which penetrated into the substance of the diseased skin adjacent to the anus.

The degeneration, which had given the rectum an enormous thickness, ceased abruptly nine or ten centimetres from the anus. Immediately above, the rectum presented considerable hypertrophy in the muscular layer. This affection, which had all the characters of colloid degeneration, presented an arrangement in its upper two thirds which I had never before met with, and which I will try and describe. Let one imagine a number of acephalocysts of unequal size (some of them as large as pigeons' eggs) squeezed firmly one against the other, and held in a fibrous network, and one will have an exact idea of the change. Only these were not acephalocysts. The covering of each cyst was fibrous, very thin, and yet very strong; the matter contained in them exactly resembled currant jelly, on the surface of which had been deposited a cretaceous matter exactly similar to that which sometimes covers the excrement of birds. This cretaceous matter contained calcareous concretions. In the center of the jelly-like substance two or three blood-vessels were to be seen, similar to those which form in a hen's egg—vessels without walls, ending in an enlargement of one extremity.

The fibrous network in the midst of which these cysts were inclosed was evidently made up of the transformed coats of the rectum. I could recognize the longitudinal fibers of the rectum. There was also adipose tissue, an evident proof that the degeneration had not only invaded the rectum, but had developed at the expense of the adipose tissue of the pelvis.

The lower third of the rectum presented no sign of a cyst, but an areolar tissue, with fibrous meshes, which occupied all the circumference of the anus: this tissue was filled like a sponge with colloid matter, which could easily be pressed out, and the tissue itself was approaching erosion or ulceration. The areolar and gelatiniform degeneration appeared to me to penetrate into the thickness of the skin of the anal region; while an extremely thin, almost epidermic, pellicle had resisted and covered the swellings on its surface. In the vicinity of the circular ulceration of the rectum, the colloid matter had not undergone degeneration, only it was permeated by an increased number of blood-vessels. Behind the rectum was a colloid alveolar mass, all the areolæ of which contained blood-vessels. This mass had evidently been formed at the expense of the circum-rectal adipose tissue.*

Cruveilhier draws this distinction between colloid and encephaloid. The colloid degeneration is not susceptible, as is the encephaloid, of inflammatory action producing gangrene; moreover, if the sanguineous centers are not absolutely foreign to it, it is certain that they are incomparably rarer in colloid than in the cancerous degeneration, properly so called, where effusions of blood are so often met with—apoplectic centers sometimes so large as to conceal the true nature of the morbid tissue.

Colloid alveolar degeneration shows only one mode of destruction—by encroachment in successive layers; this encroachment, sometimes rapid when it occurs in the alimentary canal, permits of the reëstablishment of the flow of fæces, temporarily interrupted by the undefined and often very rapid increase in the degenerated parts; so that, to the gravest signs of fecal retention, there sometimes succeeds a more or less rapid separation, with or without diarrhœa.†

Melanotic carcinoma, or black cancer, is by some classed among the true cancers, and by others among the sarcomata. It belongs to the class of soft or medullary cancers, and its distinguishing feature is the development of pigment. Whatever may be said of the microscopic characters of melanoma, it is clinically a very malignant growth, running a very rapid course, and very likely to become generalized. Its clinical history, as relates to the rectum, is to be studied from ten cases only, which have been given in full in an exhaustive study by Nepveu, read before the Société de Chirurgie, (1880).‡ The cases are reported by the following observers: Schilling,§ Kopp,‖ Moore,¶ Maier,** Virchow,†† Ashton,‡‡ Gross,§§ Meunier,‖‖ Gussenbauer,¶¶ and Nepveu.***

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* Cruveilhier, "Traité d'Anatomie Path. Gén.," t. v, p. 67.

† *Ibid.*, p. 69.

‡ "Mémoires de Chirurgie," Paris, 1880.

§ Mentioned by Eiselt, obs. v, "Prag. Viertelj.," Bd. 70 u. 76.

‖ "Denkwürdigkeiten in der ärztlichen Praxis," Bd. iv, Frankfort, 1838, pp. 305-313.

¶ "Medical Times," March, 1857.

** "Berichte über die Verhandlungen der Naturforschenden Gesellschaft zu Freiburg, 1858, No. 30, p. 516.

†† "Pathologie des Tumeurs," Paris, 1867, t. ii, p. 281, note.

‡‡ Ashton, T. J., "Prolapsus, Fistula in Ano," etc., 3d ed., London, 1870, p. 162.

§§ "System of Surgery," Phila., 1872, vol. ii, p. 589.

‖‖ "Bull. de la Soc. Anat. de Paris," 1875, p. 792.

¶¶ "Ueber die Pigmentbildung in melanotischen Sarcomen und einfachen Melanomen der Haut." Virchow's "Arch. f. path. Anat. u. Phys.," lxiii, 1875.

*** *Op. cit.*

From the six of these cases which are reported with an approach to completeness, several facts of interest are to be gathered. The age of all of the patients was advanced, ranging between forty-five and sixty-four years. Five were in men, one only in a woman. In the microscopic examinations which were made in five of the cases, the tumor is in every case described as a sarcoma. There is nothing in the symptomatology to distinguish this form of disease from others, except that in one case the stools were colored black from mixture with the pigment—a point which might aid in diagnosis, were the tumor so high up as to be out of sight. In rectal examinations it was also noticed that the finger was colored in the same way. The location of the disease was once in the sigmoid flexure, twice in the rectum above the sphincter, and four times at the anus. The size of the growth was generally considerable, surrounding the bowel and projecting into its cavity; sometimes it was firm enough to cause tight stricture, at others ulcerated and broken down in parts. The course of the disease is marked by secondary deposits in the adjacent glands or in the viscera, while the original growth may spread in neighboring organs, and by ulceration cause a foul discharge mixed with blood and pigment. To these may be added the usual signs of incontinence and obstruction. The duration of the disease in no case exceeded three years, but it was generally fatal in a much shorter time. The diagnosis is easy if the growth can be seen, and is sometimes assisted by the secondary black deposits. In four cases the tumor was removed, but in none was the return long delayed.

Osteoid Cancer.—Either a sarcoma or a carcinoma in any part of the body may become ossified, and hence pathologists speak of osteo-sarcoma and osteo-carcinoma. It is rare that such a formation is found in any structure except bone or periosteum; and there seems to be but one case on record of bone-cancer of the rectum, which, because of its great rarity, I will quote in part:

> The preparation was removed from the body of a lady, aged about fifty-four, who died January 18, 1869, under the care of Mr. Collambell, of Lambeth. The history of the case pointed to the existence of disease in the rectum for about twenty years (during which time she had occasionally complained of pain, irregularity of the bowels, and a discharge of blood and mucus). . . . The specimen includes the whole pelvic viscera. The rectum is laid open posteriorly, but rather on the right side, and shows a cancerous mass projecting into its interior at a distance of about four or five inches from the anus. The principal mass, of about the size of a walnut, is situated directly at the back, and occupies nearly the whole caliber of the rectum, but the disease involves, more or less, the entire circumference of the intestine upon a level rather above the larger mass. A small opening, large enough to admit a goose-quill, is found in the sigmoid flexure,

about twelve inches above the cancerous growth, and communicates with a circumscribed abscess cavity within the peritonæum, above the pelvic viscera, and behind the pubes, and this again communicates with the rectum immediately below the obstruction. At the time of the post-mortem this peritoneal abscess contained very little fluid, but what there was was pus discolored with fecal matter. There is also a large, foul, burrowing abscess, situated in the sub-mucous tissues, almost completely surrounding the rectum at the seat of disease, communicating freely with its cavity and directly continuous with the intra-peritoneal abscess. When first laid open, the surface of the cancer generally presented a nodulated, red appearance, but the larger or posterior mass was roughened in its lower half by numerous sharp spicules of bone which projected from its surface. The cut surface showed the growth involving the thickened muscular coat as a hard, contracting mass, and from its base firm, fibrous bands ramified into the neighboring fat, just as from the base of an ordinary scirrhous tumor. That portion which projected into the cavity of the rectum was softer, and its lower part was occupied throughout by numerous spicules of true bone. On the surface, the softer structures having sloughed away, the bony constituents were exposed. The growth did not extend to the sacrum, which was perfectly healthy, and the other bones of the pelvis were also free from disease. The other viscera were examined and appeared healthy. The lymphatic glands were not carefully examined, but in the parts which were removed there was no glandular enlargement to be found. The ulceration in the sigmoid flexure seemed to be of a simple character; there was no evidence of malignant deposit elsewhere than in the obstructed portion of the rectum. On examining the growth in the rectum it was found to be firm in the deeper parts, where it involved mucous and sub-mucous tissues, but, nearest to the surface, where the spicules of bone were evident, it had the appearance and character, to the naked eye, of a fibro-fatty structure. In the deepest parts, however, where it was firmest, it had not any very great hardness. The parts involved in the ossification lay exposed in the rectum, and seemed, from their shreddy, softened appearance, to have been recently sloughing. Upon section, a quantity of juice was readily obtained, and showed under the microscope an immense number of free nuclei and cells of all shapes and of variable sizes, though the greater number were elongated or oval, and about half the size of the columnar epithelium of the neighborhood. There was a large quantity of molecular matter and oil, and the nuclei were indistinct. The solid portion of the growth was composed of cellular and muscular structures imbedded in a granular matrix. Bands and fibers, composed almost altogether of nuclei, ramified in the growth, and could be traced as continuous with the osseous portions. It appeared that the nuclei became darker, granular, and harder in outline as the examination was carried toward the ossified parts; the intervening matrix became more fibrous, and the processes of bone branched out into this. The bony spicules contained numerous lacunæ, whose size was about that of the ordinary nuclei of the growth. They were of various forms, generally branching, and were arranged with no regularity, but in the manner usually found in adventitious bony deposits in tumors. The matrix was granular. The interest of this case lies chiefly in the fact of bone being found ramifying through parts of the structure; and that this bone was the result of ossification of the scirrhous growth seems evident from the manner in which it could be traced under the microscope. That it was not an original formation apart from the scirrhus must be admitted, for its histological characters show its definite relation to the elements of the tumor, the lacunæ replacing the nuclei, and the rest of the bone occupying the place of the intervening matrix. And a primary bone tumor in this position is difficult to imagine. The occurrence of true bony deposit in medullary tumors is not altogether infrequent; but then it is found in the deeper parts, and is almost always in connection with some bone. In scirrhous growths, however, I do not find any mention of ossification occurring, except where starting from bone. I have no history of any case of any kind of tumor of the rectum in which bone formed an element of a primary growth.*

The symptoms of cancer of the rectum may be classified as follows: pain; those due to contraction, to ulceration, to invasion of neighboring parts; and, lastly, the generalization of the disease and the cachexia.

A cancer of the rectum may, and often does, begin so insidiously that its existence is not suspected by the patient till it has made irreparable progress. This will be the case particularly when the disease is well up in the bowel beyond the reach of the sphincters. The slight sensitiveness of the mucous membrane of the rectum proper is a well-known clinical fact, often proved by the existence of extensive ulceration, the application of escharotics, and the performance of surgical operations without pain. On the other hand, cancer of the rectum is usually attended with great pain, and the suffering in itself may be made of great assistance in diagnosis. The chief nerve supply of the parts about the rectum and anus is from the internal pudic, a nerve having very intimate connections with the other nerves arising from the same portion of the cord, and supplying the other pelvic organs and the lower extremities. This simple anatomical fact serves to explain the wandering and often anomalous pains which are so commonly present—pain, numbness, and loss of motion in the lower extremities, difficulty in making water, retention of urine, etc. The following case illustrates the point better than would a long description:

A lady consulted me, says Mr. Brodie, concerning a pain to which she had been for some time subject, beginning in the left ankle, and extending along the instep toward the little toe, and also into the sole of the foot. The pain was described as being very severe. It was unattended by swelling or redness of the skin, but the foot was tender. She labored also under internal piles, which protruded externally when she was at the water-closet, at the same time that she lost from them sometimes a larger and sometimes a smaller quantity of blood. On a more particular inquiry, I learned that she was free from pain in the foot in the morning; that the pain attacked her as soon as the first evacuation of the bowels had occasioned a protrusion of the piles; that it was especially induced by an evacuation of hard fæces; and that, if she passed a day without any evacuation at all, the pain in the foot never troubled her. Having taken all these facts into consideration, I prescribed for her the daily use of a lavement of cold water; that she should take the Ward's paste (confectio piperis composita) three times daily, and some lenitive electuary at bedtime. After having persevered in this plan for the space of six weeks, she called on me again. The piles had now ceased to bleed, and in other respects gave her scarcely any inconvenience. The pain in the foot had entirely left her. She observed that, in proportion as the symptoms produced by the piles had abated, the pain in the foot had abated also.*

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* Wagstaffe, "Trans. of the Path. Soc. of London," vol. xx, p. 176.

Attention has been called to the point in diagnosis that the existence of pain or cramp in the lower extremity in cancer of the rectum is a bad sign, suggesting a direct encroachment upon some of the neighboring nerves, either by implication and pressure of the glands, or by direct extension of the original disease.† In the later stages of cancer the pain is often the most important symptom to be met by treatment. It may then be due to the irritation of fæces upon an ulcerated surface, to the involvement of the anus in the ulceration, or to direct pressure on adjacent parts, and each of these is to be met by a different and appropriate treatment. In the latter condition no operative procedure is likely to be of much benefit.

The symptoms directly referable to contraction of the bowel are often slight, and differ in no way from those caused by the simple, fibrous stricture of the same part. It is often astonishing to the surgeon to meet with an advanced case of scirrhus in which the caliber of the bowel is so nearly occluded as scarcely to permit the passage of the end of the finger, and yet in which the patient has never had sufficient uneasiness to call for a direct rectal examination. The one great sign of contraction of the rectum is constipation, with occasional attacks of diarrhœa, in which large quantities of fæces are passed. The constipation is accounted for by the obstruction and consequent accumulation above the stricture; and the diarrhœa is secondary to the accumulation, which in time begins to act as a foreign body, setting up a catarrhal inflammation. As a result of this, sufficient fluid is secreted to soften the hardened masses, and in this way large quantities are discharged, only to be followed by another accumulation.

It has often been asserted that a well-marked lessening of the rectal caliber must, in the nature of things, produce a change in the shape of the fæces, but this is not quite true. The flattened, tape-like stool is a sign of value when present, and should always lead to careful exploration, but it may not be present even in the worst cases of stricture, and it may exist without stricture; in the latter case generally being due to an irregular spasmodic action of the sphincters, or to pressure from without the bowel. This point, to which attention was called by White* as long ago as 1815, has again been made the subject of discussion. In an able article on "Annular Stricture of the Intestine; its Diagnosis and Treatment," in the "British Medical Journal" for May 31, 1879, Mr. Stephen Mackenzie wrote: "The fact that full-sized, properly formed fæces are occasionally passed, of course shows that there can be no organic stricture." Under criticism he withdrew the statement in the issue of the same journal for May 15, 1880, with the explanation that it was founded on his personal observation, which had since been supplemented and corrected by that of others.

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* Mayo, *op. cit.*, p. 66.

† Hilton, "Rest and Pain."

In a case which I recently saw in consultation with Dr. De Long, of Brooklyn, I had a long-wished-for opportunity to observe, in the presence of a number of physicians, the actual mechanism by which tape-like stools are produced. The woman suffered from a stricture one inch above the anus, which was of sufficient caliber to admit the ends of two fingers easily. She had never noticed any deformity of the fæces. While under the influence of ether, and after the sphincter had been very thoroughly dilated, an O'Beirne's tube was passed through the rectum, which was empty, into the sigmoid flexure, which was full. After resting there a few moments, it provoked a movement of the bowels. The stricture was instantly crowded down into view, appearing at the anus and taking the place of the anus, which, owing to the complete dilatation, ceased to have any action, and was simply a patulous ring. Through the stricture there came a long, tape-like evacuation, the mold which gave it its peculiar form being the stricture pressed to the surface of the perinæum, and greatly lessened in caliber by folds of mucous membrane which were crowded into it from above. While remarking to those present on the peculiar mechanism of its production, the straining ceased, the stricture rose, the mucous membrane was relaxed, and a passage of natural formation was the result. This alternation was repeated several times. At each violent effort the stricture was forced down to the anus, the membrane above it was crowded into it so as to greatly lessen its caliber, and a flat passage was the result. When the effort was less violent there was still a passage, but, the stricture having risen to its place, and not being so tightly filled with the mucous membrane, the passage was natural. The lesson to my own mind was this: that a stricture of large caliber might, as a result of straining, cause a passage of very small size; and that, to get this peculiar shape, the stricture must be crowded down so as to actually take the place of the external sphincter, and be the last contracted orifice through which the soft substance is expressed. It is well known that, with the closest stricture high up, the fæces may be reformed in the rectum below, and be passed normal in size. At the bedside but little importance is to be attached to the statements of patients concerning this matter.

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* "With regard to the lessened diameter of the fæces, just noticed, which must necessarily be the case whenever a permanently contracted state of the gut takes place; yet it has happened in some instances, where that change had been observed, that, in a more advanced period of the disease, fæces of a natural size had occasionally passed. The knowledge of this circumstance I consider of some importance, inasmuch as, if properly attended to, it will prevent the practitioner from hastily concluding there is no stricture merely from an examination of the evacuations, when symptoms may otherwise indicate the presence of the disease."—"Observations on Stricture and other Affections occasioning a Contraction in the Lower Part of the Intestinal Canal," etc., Bath, 1815.

After a stricture has existed for a certain length of time, signs of obstruction will be manifest by abdominal palpation and inspection. The transverse and descending colon can be felt partially distended with masses of fæces, and will be dull on percussion, tender to the touch, somewhat movable, and pitting on firm pressure. After an attack of diarrhœa, or after a brisk purge, these accumulations may disappear, only to form again in a short time. Generally complete obstruction does not occur without ample warning in this way. It is preceded by eructations of fetid gas, the abdomen swells and becomes very tender on pressure, the coils of intestine are visible through the abdominal wall, and their visibly violent peristalsis gives proof of the effort nature is making to overcome the obstacle. After a short time the patient is exhausted, and, unless surgical aid is given, dies. Complete obstruction has been seen to occur very suddenly, forming almost the first intimation of serious disease; and this is more apt to be the case where the stricture is high up in the rectum or at the junction with the sigmoid flexure. It comes on with the usual signs of acute intestinal strangulation—pain, swelling of the abdomen, bloody passages, etc., and it may be caused by some indigestible substance which has been swallowed and refuses to pass the stricture, or merely by hardened fæces or prolapse of the bowel above into the constriction. The following case is one of quite a large class:

"The patient, a middle-aged woman, was admitted into St. Bartholomew's Hospital with symptoms of sudden obstruction. She stated that she had enjoyed good health up to the onset of the attack, nor had she previously been troubled with constipation. The attack commenced suddenly while at work, and was followed by obstinate vomiting and constipation. The symptoms having existed for some days, and the case appearing urgent, while the sudden onset of the symptoms suggested mechanical strangulation, it was deemed advisable to open the abdominal cavity. This being done, Mr. Marsh felt a hard cancerous mass in the walls of the bowel, which caused the obstruction. The bowel was opened above the obstruction, stitched to the sides of the wound, the patient making a good recovery." *

There is one important element in the obstruction due to stricture, whether cancerous or not, which must not be forgotten. It will sometimes happen that fatal obstruction will occur even when, on post-mortem examination, the caliber of the stricture is found to be large enough to permit the passage of the finger, showing that the obstruction could not have been due merely to the contraction of the new growth. John Hunter remarked a fact of this sort, as is proved by the following account:

"On introducing the pipe by the anus, it was found to come butt against one side of the upper part of the cavity of the tumor, where there was a bend in the passage; but why a crooked pipe did not pass when attempted to be passed by turning it to all sides, I can not conceive, or, why a bougie which was slightly bent did not hit the hole, is not easily accounted for; but, what is more extraordinary than either, why a clyster did not pass freely up; or why did not the wind or soft excrementitious matter that did yet lay [*sic*] pass readily down, while I could pretty readily pass the end of my finger down from the gut above into the tumor? The folds of the contracted part did not appear after death to have been sufficient for an entire stoppage of this sort." †

Notwithstanding the statement that the folds of the part did not appear *after death* to have been sufficient to produce the stoppage, it seems that a prolapsed fold of mucous membrane is the only thing likely to give rise to it. In cases of advanced disease a spasmodic stricture (if such ever occurs) would seem out of the question, whereas partial or complete invagination in this part is known to be of frequent occurrence. As shown by Rokitansky, ‡ the paralysis above the stricture is also an undoubted element in the production of the occlusion.

As showing what efforts nature is capable of making to overcome the occlusion caused by stricture, the following account of the post-mortem appearances found in the body of Talma, the tragedian, is of great interest. The whole history of the case may be found in Quain. §

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* Cripps, "Cancer of the Rectum," p. 107.

† Hunterian MS. Cases and Dissections, No. 59, in "Descriptive Catalogue," etc. vol. iii, p. 98. From Mayo, *op. cit.*, p. 249.

‡ "Manual of Path. Anat.," vol. ii, translated by Sieveking.

§ *Op. cit.*, p. 190.

In the examination of the body the intestines were all found largely distended with air and fecal matter. . . . The pelvis was filled with an enormous sac—the upper part of the rectum largely dilated. When the sac was raised, a circular narrowing of the gut was discovered. This was the stricture. It was at the distance of six inches from the anus, and proved, upon close examination, to be wholly impervious. It was, in fact, a solid fibrous cord, but on the surface irregular, and having the appearance of a purse, drawn tightly and puckered, with the strings tied around it. The great dilatation of the bowel at its lower end dipped down below the level of the stricture in the form of a dependent sac, in which was an opening about an inch in diameter, and from this opening issued a fluid the same as that diffused through the abdomen. The rectum below the stricture was no more than the size of a child's intestine, and upon it, close to the stricture, was an ulcerated surface with a narrow opening, to which the edges of the aperture above the stricture had been adherent. A new communication, but an imperfect one, had thus been established between the two parts of the gut—severed one from the other by the stricture. But the connection had given way, doubtless in consequence of the violence of the expulsive efforts, and thus the contents of the bowel had escaped a short time before death.

With the commencement of ulceration there begins an entirely new train of symptoms, which have been described by Allingham * with such perfect clearness that we can not do better than refer the reader to his work.

The hæmorrhage from an ulcerated rectum in cancerous disease is seldom profuse enough to be dangerous, though by frequent repetition it may become an important factor in the ultimately fatal result. The odor of the discharge is the same as that from a cancer of the uterus, and needs only once to be appreciated to be remembered.

Above the contraction there often develops an ulceration which is not to be confounded with the breaking down of the cancer itself. There is first dilatation of the bowel, then hypertrophy of the muscular tissue, followed by thickening of the mucous membrane, then ulceration due probably to the irritation of fæces. This ulceration may extend far up the bowel, and result in denudation of the muscular coat, the fragments of membrane being occasionally visible in the matters discharged. As a result of this process, perforation of the weakened coat may take place as high as twelve inches above the constriction. Such an accident was the immediate cause of death in the case of bony cancer previously given. When the cancer itself once begins to break down and ulcerate, its extension is limited by no tissue of the body. The bladder may be opened and a permanent fistula result, in which case the passage is generally from that viscus into the rectum ; but the opposite may

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* *Op. cit.*, p. 219.

be the case—and the pain caused by the entrance of fæces into the bladder and their discharge through the urethra is one of the best of all the indications for colotomy. The prostate and seminal vesicles in the male and the recto-vaginal septum in the female may each be destroyed; in fact, any part near the disease may be implicated. Smith * has recorded a case in which the disease opened into the hip-joint, and Mollière † another in which it invaded the soft parts in the loin.

There are two sets of lymphatics which may be involved in malignant disease of the rectum, one coming from the anus and going to the glands in the groin; and one coming from the rectum proper and going to the glands in the hollow of the sacrum and lumbar region. The lymphatics of the rectum proper are arranged, like those of the intestine generally, in two layers, one beneath the peritonæum and one between the muscular and mucous coats. Immediately after leaving the intestine, some of the vessels pass through small glands adjacent to it, and all finally enter the glands in the hollow of the sacrum or those higher up in the loin. There is a free anastomosis at the anus between this set and those going to the groin. The proper place, therefore, to feel for glandular involvement in disease within the sphincter is along the spine, deep in the pelvis—a simple point which may decide the surgeon for or against operative interference. This implication of the lymphatics is sometimes shown by pressure effects at points quite remote from the original disease, as in the following case from my own casebook.

J. B., aged sixty, has always been strong and well until within a few weeks past, when he has been troubled with obstinate constipation. All he desires now is some "pills" to move his bowels. On closer questioning, he refers casually to the fact that he has considerable pain in the right thigh, and some swelling in the right leg and foot, but "nothing to speak of." On examination, nothing was to be detected by rectal touch, but the pelvis at its upper part was partially filled by firm, nodular masses, which extended deeply down into the right iliac fossa. The patient had no conception of any trouble beyond constipation and "rheumatism," though the whole lower extremity on the right side was œdematous. By careful diet and laxatives the threatened obstruction was avoided, and the man gradually sank with all the signs of the cancerous cachexia, and died three months from the first examination. Unfortunately no autopsy could be obtained.

From what has been said, it is evident that there is little in the history which the patient will give of cancer of the rectum to dis-

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* "Surgery of the Rectum," London, 1871.

† *Op. cit.*, p. 565.

tinguish it from ulceration and stricture of any other variety, and that the diagnosis must chiefly rest upon a physical examination. To make such an examination thoroughly, and yet safely, requires great care and gentleness, and, to properly interpret the conditions which may be found, no little experience and knowledge. It requires many years of practice to reach the point Allingham has reached when he says: "There is something peculiar about the feel of cancer which the practiced finger rarely mistakes even for simple indurated ulceration. I think it is many years now since I mistook the one for the other." For making a rectal examination the same conditions are necessary as in a vaginal examination—a good table and a good light. Every surgeon has his own preference in the matter of the former, but in my own office I prefer artificial light for illumination, and have arranged an apparatus similar to Tobold's laryngoscope. The light, however, is movable up and down upon a brass rod four feet long, attached to a heavily loaded base standing on the floor. It is connected with the gas at pleasure, like an ordinary drop-light, and the whole apparatus may be moved to any part of the room. With this and a forehead mirror, the rectum may be thoroughly illuminated at any time. The same idea seems to have been carried much further in an instrument to be found at the shops under the name of a "colonoscope," which is simply a nickeled cylindrical speculum twelve inches long, and about one inch in diameter. The lower six or seven inches are solid, but the remainder is of wire curled spirally so as to retain the size and shape of the other portion, but to add flexibility. With this goes a laryngoscopic mirror on a correspondingly long handle. I can hardly believe the thing was ever seriously intended to be used: for to introduce it at all into a healthy rectum must be a work of art; to try to use it in a diseased one must be dangerous; and to get an image of any value on the mirror after it is *in situ* would seem a stroke of genius.

Before proceeding to examine the interior of the rectum, certain things are to be noticed at the anus, one of the most common of which, in cases of advanced disease, is the presence of numerous tags of skin resembling dried-up external hæmorrhoids. They may be exceedingly large, measuring an inch or more in length and breadth, and in number from one to six or eight. On the anal surface they are often excoriated and bathed in the discharge from the rectum. To the irritation of this discharge they owe their origin, but they indicate simply contraction and ulceration, not necessarily cancer. The anus itself will often be found patulous, instead of tightly closed, as it should be, and from it pus may be seen to flow without the consciousness of the sufferer. This condition often exists when the part is not directly involved in the disease; and is not due to destruction of the tissues, but to paralysis from pressure by the disease above.

Before any attempt is made to use a speculum, the finger should be introduced, for in the majority of cases it is upon examination with the end of the finger that the diagnosis rests. In soft cancer, especially after ulceration, the diagnosis is generally easy, and in epithelioma, where the cancerous ulcer is found on the indurated base, the general practitioner is not apt to make the mistake of considering the condition due to anything except malignant disease. An epithelioma of the form first described may with difficulty, however, if at all, be distinguished from lupus; and, as we have already said, a scirrhus may be indistinguishable from an advanced fibrous stricture by the touch.

After the finger has appreciated the nature and extent of the disease, the location of the constriction and its caliber, and any other points within its reach, the speculum may be introduced, if possible and necessary. When the stricture is low down it may not be possible, and it is often unnecessary. The way to dilate the anus is by introducing first two fingers, then three, and gently boring and stretching a passage-way with the cone thus formed. By this means the anus may be dilated to its fullest extent without even tearing the mucous membrane, though such a result is uncommon. It is much better to allow five minutes for this step than to introduce both thumbs and tear the anus open. Beyond this point I can give but one caution—gentleness. The only speculum worth using for the lower part of the rectum is Sims's. If desirable to inspect as high up as possible, beyond the reach of the blade of Sims's, the best instrument is a small-sized cylindrical vaginal speculum, made a couple of inches longer than usual. With this, and the patient leaning over something and straining down, the greater part of the rectum proper may be illuminated. With one or other of these instruments the parts below the stricture may be examined; and both of them may do damage by carrying the constriction away from the anus on their points, and thus bringing force to bear on a diseased rectal wall—a wall which in some cases will tear like wet pasteboard, and allow an instrument to go through it without any perceptible force.

Fortunately for the diagnosis, most cancerous as well as most other strictures are low down in the rectum, and within reach of the finger.

There is nothing in surgery more difficult to diagnosticate with certainty than a stricture beyond the field of touch and vision, at the upper limit of the rectum, or in the sigmoid flexure; and no task which the surgeon approaches with more misgiving and less self-confidence than the examination of these parts. Cancerous disease in this locality is best examined for through the abdominal wall. The best bougie is the softest, and it should have a rounded, blunt end, rather than a tapering point. I have not met with the same success in passing the hard-rubber, olive-pointed instrument on the slender stem which others have found; and all other varieties seem to me to be inferior to the one made of soft rubber. O'Beirne gives the following description of the way to pass his tube: "A gum-elastic catheter of the largest size was inserted into the anus, and passed to the height of about two inches up the rectum, where its further progress was felt to be opposed by strong expulsive efforts, which lasted but for a few seconds, then relaxed and again became renewed. By first yielding somewhat to these efforts, and then taking advantage of the succeeding relaxation, the instrument was gradually passed to the height of seven or eight inches. At this point the resistance was sensibly felt to be much greater than at any former, but, instead of allowing it to yield, the instrument was pressed more firmly upward. Having steadily continued this pressure for about one minute, the resistance suddenly gave way, the tube passed upward as if through a narrow ring," etc.*

Even with the softest instrument, the moment when the obstruction suddenly gives way, and the instrument passes forward, will be an anxious one for the surgeon, and the life of the patient may be sacrificed to desire for certainty of diagnosis. For a cancerous stricture of the sigmoid flexure will show itself sooner or later either by examination through the abdominal wall, or by the signs of intestinal obstruction; and it is to be treated by colotomy and not by dilatation. The same caution in examination applies to all cancerous disease above the lower three and one half inches of the rectum, for beyond this point there is but one treatment, and that is the same, whether its exact upper limit be known or unknown. With the finger we can tell whether extirpation or rectotomy is allowable, and, if the disease is beyond the reach of these measures, there is but one point to be decided—whether colotomy should be done on the right or left side; a point which can generally be settled without running the risk of a fatal perforation with an instrument.

* "New Views," etc., p. 71.

ACUTE PRIMARY SYNOVITIS OF THE HIP.*

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I REPORT the following cases, to call the attention of those who are in general practice to a disease which I believe must occur with more frequency than we should naturally suppose. There are cases of so-called hip disease, running a comparatively brief course and occurring in children from eight or ten to fifteen years of age, the history of which would indicate that nothing more than the synovial membrane was ever the seat of lesion. The patients between the ages of two and seven years who come under our observation for joint disease, as a rule, have a primary lesion in the bone—a chronic central osteitis of the epiphysis—and the synovial membrane is not involved until a late period in the disease.

The history of an osteitis is different from that of a synovitis. In the one we have an almost imperceptible beginning, in the other the invasion is acute and well defined. The signs on examination, too, differ materially. In the early stages of an osteitis we get no joint tenderness, and the pain is not acute enough to prevent the child from walking. In synovitis the joint tenderness is very marked, and the patient after the first twenty-four hours is unable to walk during the first and second weeks. The one disease is, as a rule, chronic, the other is acute; one extends over a period varying from two to five years, the other over a period varying from four to ten weeks.

In a paper on "The Strumous Element in the Etiology of Joint Disease," published in the "New York Medical Journal" for July and August, 1877, I recorded my first case of synovitis of the hip. It is Case IV of the list. Two more are on record in another paper, on "The Diagnosis of Hip Disease," published in the "American Journal of the Medical Sciences" for October, 1878. My friend, Dr. E. H. Bradford, of Boston, in a paper on "Hip Disease," in the "Boston Medical and Surgical Journal" for November 11, 1880, has reported a case (No. XIX) of synovitis of the hip.

It is difficult to formulate symptoms—symptoms, I mean, that are pathognomonic. One must examine the case with care, testing the functions and sensitiveness of the joint thoroughly, employing such means as may suggest themselves. He must remember that, if the joint be tender, he should get referred pain in the obturator whenever the joint surfaces are approximated. There should be no infiltration in the periarticular tissues. Sometimes one can perceive an elastic fullness about the trochanter or below the groin, if there be much distention of the capsular ligament. Then, there must be a history of acute pain and great tenderness. The history will be very clear—the mother being able to name the day, and the hour frequently, when the first attack of pain was experienced. A diagnosis can often be reached by exclusion. The cases here reported I have given in detail, in order to bring out points in examination.

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* Read by title at the last meeting of the Medical Society of the State of New York.

As to prognosis, I do not know of any cases that have not made a good recovery. The function of the joint is restored, and no one can tell from the gait that any joint lesion has ever existed, except perhaps in a single case—one of those published in the paper on the "Diagnosis of Hip Disease," already cited. This child was slightly lame for a long time after all other symptoms had subsided, though a note made during the past year was to the effect that all traces of lameness had disappeared.

The treatment has been very simple, viz., *rest* and *counter-irritation.*

Case I.—Maggie M., aged nine years, was admitted to hospital September 19, 1879. The case was referred by Dr. William T. Bull. With the exception of intemperance in the father, the family history on both sides of the house was good; the hygienic surroundings had been poor, yet the child had been in good health up to the invasion of the present disease, the first symptoms of which appeared on the morning of the 12th inst. without any assignable cause, unless perhaps exposure to cold may be regarded as a cause. The girl walked a little lame that morning, favoring the left side, and referring the pain to the knee; was not very lame, and, indeed, rested very well that night; but the next morning, the 13th, she was unable to walk at all, so tender the joint, and so acute the pain. In the afternoon fever came on and persisted throughout the entire night. She suffered very much every day and every night until the day of her admission. While asleep, the limb was flexed at the hip and at the knee. The pain had been paroxysmal, and had been referred always to the groin, the inner side of the thigh, and the knee. The appetite had been good and the bowels regular. The child was carried in with the greatest care, and considerable difficulty was experienced in preparing her for examination.

While the patient was quite anæmic, the muscular system was fairly developed. As she stood, the right limb bore the weight, while the left was slightly flexed at the knee, the foot being everted. She was able to walk a short distance in the room, yet the lameness was very marked. On examination, the heart and lungs were found to be normal. Firm pressure over the trochanter, in the line of the axis of the neck of the bone, caused acute pain, which was referred to the inner side of the thigh and knee. Percussion of the flexed knee, in the axis of the femur, did not produce pain. There was no tenderness on firm pressure in the groin or in the iliac region or in the ilio-costal space. There was no infiltration or swelling in any of the localities just enumerated. The nates on the left side was broadened, though there was no infiltration here. The superficial inguinal glands were slightly enlarged on both sides. The thigh could not be extended beyond 150° without tilting the pelvis; it could be flexed to 90°, though she complained of pain in the groin when it was forced beyond this angle. Abduction and adduction could be made over one half the normal arcs. Pulse 160; rectal temperature 101·5° F. A blister was applied over the gluteal region the night of her admission, and cod-liver oil and iron mixtures were administered.

September 28th.—Most decided relief since admission. She is now free from pain, and walks quite easily, only a slight halt being perceptible. No tenderness in or about the joint. Another blister was applied on the evening of the 30th, and on October 17th it was recorded that she had grown comparatively stout, and walked without an appreciable limp. The only change observed in the nates was, that the supra-trochanteric dimple was a little shallower than that on the right side. The limbs were equal in size, and movements at the joint were perfect and painless. Pressure over the trochanter, in the direction of the joint, gave no pain; concussion gave none. The cure was complete.

October 24th.—Submitted to a thorough examination, and the supra-trochanteric dimple found normal. No sign or symptom of disease. Discharged this date, the parents promising to report on the first sign of any relapse. At the present writing, March 1, 1881, she has not returned.

Case II.—Lewis K., aged twelve years, was admitted to hospital October 3, 1879. He came from a country town in Westchester County, and was a well-developed, muscular-looking lad. There was a history of phthisis on both sides of the family, and the father was reported to be suffering at the time from sciatica. With the exception of a slight attack of what was regarded as malarial fever, two years since, the boy himself had been in excellent health until one month before, when he was seized with pain on the inner side of his right thigh. He had been in bathing quite frequently during the latter part of the summer—three or four times a day, and it was to exposure or fatigue that his pain was attributed. He was able to walk around the first day, although he was decidedly lame. On the third day he took to bed, so tender had the parts in and about the hip become. There was considerable febrile disturbance, without constipation, and morphia had to be administered every night to allay the pain. The hip and the knee alternately had been the seat of pain, and the limb had been with difficulty moved at all. Recently he had suffered most in the distribution of that branch of the obturator which supplies the knee. He held the thigh acutely flexed while lying in bed. He was taken from his bed this morning and brought into the hospital. Is able to stand, although the weight is borne on the left limb, while the right is a little advanced, the foot being everted. He remarks that this is the first time he has been able to set his foot squarely on the floor since the beginning of his illness. As he attempts to turn, he does so by means of the left foot. Can walk only when well supported on each side. He is a well-developed lad, with a face that is indicative of great suffering. It is a painful expression he has. The thorax and spinal column are examined, with negative results. There is much width to the nates on the right side, the fold is obliterated; no tenderness over sacro-iliac junction, and none elicited on crowding the alæ of the pelvis together. No infiltration in the groin or in the nates, no tenderness here on handling the parts. The superficial inguinal glands are a little enlarged. Light pressure in the groin or over the trochanter gives rise to no pain; no pain on pressure along the shaft of the femur. If firm pressure be made over the trochanter, in the line of the neck of the bone, he winces quite markedly, and refers the pain to the outer aspect of the thigh and about the knee. Concussion of the joint gives rise to much pain.

No dullness or tenderness in either the iliac fossa or the ilio-costal space. The limbs are equal in size, with the exception of their upper thirds, where the right one is one inch larger than the left. This may be due to the influence of two fly-blisters on the inner side of the thigh, cicatrices of which now remain. These were applied by order of the physician at his home.

He can not be induced to flex the thigh beyond 135°, nor will he permit extension beyond 160°. Abduction, adduction, and rotation are quite impossible, so marked is the reflex muscular action when these movements are attempted. The rectal temperature is 102·5°. We have no hesitancy in making a diagnosis of acute synovitis of the hip, and this evening a large fly-blister is applied over the trochanteric region.

Ocotber 5th, two days after admission, he is walking without support, and the improvement is at least fifty per cent. The blistered surface is being poulticed every six hours. *15th.*—This surface has healed, and the contour of the nates is nearly restored. He walks with much facility, limping very little. No joint tenderness can be elicited. It is deemed expedient, however, to follow up the blistering, and another is applied this evening in the same region. *November 3d.*—This last blistered surface has been a long time healing, and there remain now many superficial ulcers at the site of the blister. For the past few days he has been walking with a mere trace of a limp, yet he has had no pain until last night, when by accident another patient ran against him, striking the gluteal region with the wheel of a rolling-chair with considerable force. Consequently he is very lame this morning, and the soft parts, the inguinal glands especially, are infiltrated to a great extent. No joint tenderness can be found, however, by the different tests, and the pain and tenderness are thus proven to be periarticular. It would seem, then, that the contusion has simply aggravated the periarthritic infiltration resulting from the second vesication, without injuring the joint. He is put to bed for a few days, and the poultices are renewed.

December 13th.—The ulcers have been most obstinate, and the periarthritis of our own making has given him much more trouble than did the synovitis after his admission to the hospital. They (the ulcers) have finally a scab over each. A few days ago the boy was submitted to a thorough examination regarding joint functions, and these were found perfectly restored.

January 12, 1880.—Discharged this date, cured. There are no signs of any disease, nor any remnants of disease, with the exception of the roughened skin at the sites of blisters. His general health is excellent.

October 31st.—The father writes me, in response to a letter of inquiry, that there has been no sign of any relapse, and that the boy is still free from pain and lameness.

The following case I did not have under personal observation. I find it recorded in the hospital case-book for 1870 as one of "morbus coxarius." The symptoms and course lead me to regard it as one of primary synovitis. At any rate, I shall place it on record as such, although I have to regret the absence of the necessary fullness of detail.

Case III.—H. F., a girl, aged six years, was admitted to hospital September 2, 1870. The history was that the mother's family was consumptive, but that this child had been in perfect health up to the second week in August, two weeks before her admission, when, without any known cause, unless it may have been a fall three weeks before the first symptom, she began to limp and to complain of pain in the right knee and hip. She soon became quite helpless, and suffered excessively at night. The appetite failed, and she lost flesh rapidly. Her exact condition on admission is not recorded, but it is noted that a fly-blister was applied, and that on the 7th, four days later, she was comfortable. On the 8th she is reported as resting well nights, and on the 12th "very little pain" is noted. On the 13th it is stated that she "came in totally unable to walk, but can now walk, even without the aid of a chair; right leg semiflexed and everted on standing; right hip broadened; fold of nates much lowered; very little tenderness either behind trochanter or in groin, but considerable on concussion of hip through trochanter; limbs equal in length." *29th.*—Is walking with a very slight limp. *October 13th.*—No tenderness anywhere. Is walking without lameness, and is growing fat. *November 14th.*—No tenderness on pressure over, flexion or concussion of, the joint. She was under observation until the 20th of the following March, and no signs of any disease in or about the hip manifested themselves. I saw her November 2, 1880, nearly ten years later, and could find no evidence, so far as physical signs went, that she had ever had any disease. During all this period she had been free from pain, tenderness, and lameness.

A CASE OF EXTRA-UTERINE PREGNANCY.

By JAMES P. HASSLER, M. D.,
COCHRANTON, PA.

Mrs. W. J. V. called at my office May 8, 1879, to consult me about her situation. She stated that she had not menstruated at her last monthly period, and was apprehensive that she was in the family way. She had previously been regular, and was last unwell March 18–23. Her age was thirty-five years. She had one child, now nearly twelve years old.

The ordinary symptoms of pregnancy were not conclusive; so, without pronouncing an opinion, I said to her that I would see her at some future day, and after a physical examination would probably be able to relieve her anxiety. I did not see her again until I was sent for, on the 2d day of June, to visit her. I found her suffering considerably from hypogastric pains resembling uterine colic, and on examination I discovered the uterus to be enlarged to an extent corresponding with her stage of gestation, now over two months. There was a very slight "show," and a shred of membrane was protruding from the os uteri. I made the diagnosis of pregnancy, with a threatened abortion.

This attack was soon relieved, and in a week more she was enjoying ordinary health.

On the 22d of June I was again called hastily to her bedside. She was suffering now from pains of much greater intensity than on the former occasion—they were so violent, indeed, that my stay with her was prolonged to ten hours. The pain was still referred to the pelvic region, and was supposed to be due to uterine contractions. There was no discharge. An examination showed a marked increase in the size of the uterus since the former visit; but, except that it seemed to occupy a position more in the posterior part of the pelvis than usual, there were no characteristics to distinguish it from a regular three months' gestation.

This attack caused a good degree of constitutional disturbance, and was followed by great prostration, lasting for several days. For ten days her stomach was very weak and irritable. She had nearly regained her wonted vigor, when, on the afternoon of July 8th, she met with an accident—in a fall—by which another paroxysm was induced, quite equal in severity to that of June 22d. Being engaged with a case of labor, I did not see her until sundown, when I found her in great agony. Prescribing heroic doses of morphia, frequently repeated, by midnight she was brought under the influence of the drug so as to be comfortable. She rallied promptly from this attack, and never had another. The pains on this occasion seemed to be more in the abdomen than before, and yet did not have the behavior of intestinal colic, or appear quite like anything I had ever seen. I stated to the family that I could not definitely locate the trouble or satisfactorily account for it.

The significance of these periodic outbreaks was not apparent at the time, but is clear enough in the light of subsequent developments. To any one having experience in misplaced gestations, or familiar with the literature of the subject, these attacks take rank next to pathognomonic symptoms; while the country practitioner, for whom a preternatural labor is a rare event, would hardly be on the lookout for such an anomaly as an extra-uterine fœtation, and might easily fail to apprehend their import.

After July 8th the health of my patient steadily improved. Nothing occurred to mar her comfort until in September, when she began to have œdema of the lower extremities and distressing headaches. These recurred a few times, but always yielded to free doses of the sodic bromide and the use of the sal Rochelle as a laxative. Except that quickening did not take place until the close of the fifth month, the gestation proceeded, to all appearance, normally.

December 18, 1879, I was sent for to attend her in her supposed accouchement. About this time milk appeared in her breasts. When I arrived, on the evening of December 21st, she said to me: "Doctor, I am not sick yet, but think I shall be, for I have the same feelings I had in my first labor—severe pains in the back of my neck and head." I proceeded to make the usual examination, and was much surprised that I could find no os uteri. Neither along the sacrum, nor about the pubes, was there any appearance of one. Concluding, therefore, that immediate labor was not probable, I thought to relieve the more urgent symptoms by procuring for my patient a night's rest. I gave her thirty grains of chloral hydrate, and, with instructions to give a twenty-grain dose in a couple of hours if she needed it, retired myself for the night.

In the morning I renewed my explorations for the os uteri, but with no better success. The vaginal wall was carried forward from the apex of the sacrum, so that the missing os was not there. Sweeping my finger along the inner border of the os pubis, I detected no sign of it there. The vaginal wall was relaxed and very thin, so that the fœtus could easily be felt through it. As yet there were no labor pains. The distress of the evening before still continued, however, and, viewing the flushed face and persistent cephalalgia as threatening eclampsia, I took about sixteen ounces of blood from the arm, with prompt and gratifying relief to the symptoms. I then informed the husband that the case had some peculiar features, and that I would like to call counsel. Dr. Greenlee, of Meadville, Pa., a former physician of the family, was sent for, and came on the evening of December 19th. He also made careful and prolonged search for the os uteri, but without result. During the night we used some means to induce uterine action, quinine in five-grain doses and ergot cautiously, but to no avail. While she had considerable aching in the back, and a general feeling of uneasiness and apprehension, there were at no time any distinct labor pains. We were both satisfied of the existence of a fœtus, and *an imprisoned one*, but whether from occlusion of the os, uterine obliquity, or extra-uterine gestation we could not determine. Abdominal palpation threw no light on the subject. It showed the presence of a fœtus indeed, as its motions could be perceived, but the tumor, in size, position, and situation, differed in no degree from that of an ordinary pregnancy.

On the morning of the 20th, the patient being reasonably comfortable, we agreed to leave the case to Nature for a while and await developments. Assuring her that she would not have a precipitate labor, and that she was now in no immediate danger, we took our leave. December 21st I visited her again. This was the last day on which the fetal movements were perceived. No particular change was noted in other respects. I saw her daily after this for some time, treating her on general principles, relieving nervous irritation, procuring rest, and supporting the vital powers. Her condition gradually improved.

A few days after, January 24th, a fetid discharge showed itself at the vagina. Supposing a communication to have been established with the fœtus, I visited the patient to search once more for the os uteri. At this visit I discovered that a fold of the vagina, anterior to the os, had dropped down and was reflected backward, covering the os and fitting neatly as a band to the lower segment of the uterine tumor. Thus the os was effectually concealed. Passing my finger under this band, the palm of my hand upward, I could barely reach the os uteri, lying quite above the symphysis pubis. I could not move it in any direction. It seemed like a cartilaginous ring—the finger could not penetrate it more than six or eight lines, nor could I introduce any instrument within it. The discharge was perceived to issue from it, and was dark in color and very offensive. This continued for several weeks and then diminished, and recurred at the same part of the month in February and March, still fetid. In the latter days of March another consultation was had over the case, Dr. Best, of Meadville, being also present—a gentleman of very large obstetric experience. The os uteri was now more accessible, but all attempts to dilate it, to draw it down, or to introduce a sound were alike futile. Dr. Best regarded the case as too obscure to admit of a *positive* diagnosis, but approved the treatment hitherto pursued, and advised its continuance. The health of the patient was now in every way improving, and I discontinued my visits.

About the 10th of April, in answer to a letter of mine, in which I gave him a brief account of the case, the editor of this "Journal" wrote me: "Your case looks like one of extra-uterine pregnancy." At that time I thought the putrid drainage negatived this theory, but in April the discharge had no fetor, and was clearly a reëstablished menstruation. This function continued perfectly regular from this time on. The lady resumed her domestic duties, discharged her help, and, with her twelve-year-old daughter, did all the work of a housewife on a large farm. She visited among her neighbors and friends, attended church, went shopping to the town and city, and in every way enjoyed better health than the year before, when she was carrying a living child.

In October, 1880, while she was at Meadville, Dr. Greenlee made an examination, and discovered that the os uteri was in its normal position, and that the abdominal enlargement had sensibly diminished. The doctor did not attempt to introduce a sound, for want of time, so that no special information was gained by his discovery, except that, the os and cervix being those of the unimpregnated uterus, the hypothesis of a fœtus *in utero* was excluded, leaving us only that of an extra-uterine gestation.

We had advised our patient that, so long as her health was fair and no urgent symptoms developed, we would let her alone, but when her health gave way operative interference would be necessary. When this exigency came, she had made up her mind not to submit to the procedure. She always insisted that she would die under an operation, and preferred to meet death in her bed. She had also heard of a recent Cæsarean section in the same county, which had proved fatal, and this intensified her determination. Her resolution could not be changed.

I was sent for December 13, 1880. She was suffering from steady pains in the back and abdomen, had severe and persistent headache, could neither eat nor sleep, and had a low grade of fever and a look of great anxiety and distress. Remedies seemed to have lost their efficacy with her, the powers of life gradually failed, her symptoms grew in intensity, and finally, exhausted by her sufferings, on the night of the 4th of January, 1881, she succumbed—six hundred and fifty-three days from the date of conception, and three hundred and eighty after the death of the fœtus.

Autopsy, January 5th, thirteen hours after death, ten physicians present.—Incisions made first from the umbilicus to the pubes, and next to the crest of each ilium, afforded a good view of the tumor. To the eye it appeared like a pregnant uterus at term, or near it, in a normal position. The sac was tense and well rounded, the lower portion occupying the pelvis, and lay with its long diameter parallel with the axis of the spine. There was no evidence of peritonitis, except a slight infiltration into the connective tissue on the left side, contiguous to a rupture in the outer envelope of the cyst. This rupture was between two and three inches in length, and directly over the placenta, and was probably the source of the septic symptoms that developed in the patient's last illness. The adhesions on the left side were easily broken down with the hand, but on the right side they were firmer, and had to be severed with the scalpel. They were most numerous on the lower surface, and seemed to fill the whole of Douglas's space. On the right side, neither the ovary nor the Fallopian tube could be seen, though the bonds of connection had been cut before these were sought for.

The microscopic examination might reveal them. If the embryo was originally formed in the Fallopian tube, it early found its way into the cul-de-sac of Douglas, as it had attained quite a growth there by the 22d of June, and had its subsequent development there. The uterus was found on the floor of the pelvis, not at all deflected from its natural position, had no adhesions with the cyst, and was of ordinary size and healthy. The contraction of the cyst had permitted it to drop down into this space. The fœtus was found to occupy a normal position, with its head on the brim of the pelvis. It would weigh about six pounds. It was not decomposed, but there was discoloration on one side of the head and on one shoulder. It was a male. The cyst contained at least two quarts of thick, turbid, greenish-yellow fluid, which was not offensive. This large quantity of liquid gave to the sac its well-rounded form during life, and helped to obscure the diagnosis by abdominal palpation. The placenta was situated within the sac, of course, and lay above the fœtus.

At no time during the patient's prolonged illness was there any disturbance of the functions of the bladder or rectum.

DELAYED MENSTRUATION AND PELVIC CONTRACTION.

By WILLARD H. MORSE, M. D.,
HINSDALE, N. H.

In a paper published in 1878,* I suggested the theory that delayed menstruation bore a uniform relation to pelvic contraction; that a woman who did not menstruate until after the age of twenty did not, as a rule, have a natural labor, owing to the existence of an absolute pelvic contraction, the existence of which was connected with the tardiness of the initial menstruation. Since the publication of this paper I have given the matter closer study. Looked at casually, it may seem that such a theory is of importance only in so far as it embodies a curious statement; yet, viewed in a practical light, it appears of no inconsiderable value. Although I may risk repetition of some points, I wish to present in this place some of the bearings of the question.

All anatomists agree that until the age of from twelve to fourteen the pelvis of the female is not materially different from that of the male. At the time of the establishment of menstruation, and not until that time, there is inaugurated a change of the pelvic conformation, and the earliest years of adolescence have not passed ere the pelvis of the female has assumed its peculiar shape and general relations. Invariably this characteristic change occurs coincidently with the first manifestation of the menstrual phenomenon. But, in females who do not develop the state of puberty at the usual age, the pelvis undergoes no change, thus showing that there is a firm though inexplicable connection between pubescence and the pelvic modification.

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* "Am. Jour. of Obstet.," Oct., 1878.

Either through hygienic measures or as a result of medical treatment, a woman has her menses established, one, two, or it may be five or six, years after they should naturally have commenced. But these artificial modifying conditions do not alter the pelvic shape. The woman considers that she is fit to assume the condition of a wife and a mother. She marries, and becomes pregnant; and, unless the evil of abortion forestalls the still greater ill, she goes to term, when natural delivery is prevented by the narrow pelvic diameters.

Granting that we can by proper therapeutic and hygienic means establish menstruation, it remains for the physician to ask himself seriously whether it is better to leave the woman to go through life barren, or to attain nominal success by placing her in a position where the realization of her hope is clouded by an increased risk at the time of confinement. It is natural for us to yield to the temptation to break down the barrier to the procreation of life, and to think not, perhaps to care not, what the after-consequences are to be. We hold ourselves to be justified in relieving menischesis, and, if menstruation can be established, it will be done. Therefore we must consider two problems: 1. Can we by any means establish menstruation in a menischetic woman, and at the same time develop her pelvis? 2. What are the indications in the prophylaxis of menischesis, and how are they to be met, with a view to the prevention of the pelvic contraction incident upon the disorder?

In attempting to answer the first of these questions, we have to remember that when the time of puberty has passed and menstruation has failed to take place, it is patent that certain natural conditions have been transgressed and certain rules violated. Considering this as axiomatic, we have to ask if the simply undeveloped pelvis can be so modified as no longer to offer an impediment to natural delivery. Or, to divide the question, have we means to employ, coincidently with others addressed to the relief of the menischesis, which shall obviate the pelvic abnormality; and can we, after having relieved the menischesis, employ means that shall cause the pelvis to expand? It will remain for us to decide whether the measures for the relief of the pelvic contraction shall be employed coincidently with or subsequently to the anti-menischetic treatment. Our answer can be but approximative, for we shall have to consider whether there are such means at our command.

The physician, undertaking to establish menstruation in a woman of eighteen or twenty, finds that, if success rewards his efforts, he has produced no change in the pelvis. But, attempting the same in a girl who has not passed her sixteenth year, he notes that with the perfect establishment of the menses there seems to be a lengthening of the pelvic diameters. This may be but seeming and scarcely appreciable, yet in many cases actual measurement shows that the pelvis has begun to increase in size in every direction. In the case of a girl of seventeen, treated successfully for menischesis, measurement made at the end of eleven months showed a very decided increase of the diameters. In another case, a girl, who was menischetic until about her seventeenth year, subsequently married, and was delivered of a small child in the second year after her marriage. Although the anticipation may be vain, yet these and other not isolated cases may be cited as indefinitely suggesting that the pelvis deformed by menischesis shows capability of development. In the majority of instances of this kind the physician does not have an opportunity to examine the patient, to learn the results of his treatment, and, even if he makes an examination, his pelvimetry is apt to be at fault. In these cases I find that an excellent index of pelvic development is found in the mammæ, their increase in size being always coincident with the change in the pelvis.

These cases, we must mark, were those of girls whose nubility had been but slightly delayed. In them there had been no articular anchylosis, and, like the natural, the artificially-induced menstruation had provoked development. But we look beyond this and ask, if the girl of sixteen or seventeen may have relief, why can not one who is two or three years her senior be as perfectly relieved? Primarily, we have to inquire at what age the pelvis of the menischetic female becomes so far anchylosed as no longer to admit of development. It is patent that no definite answer can be given, from the fact that there is some variation in the behavior of the osseous structure. Still, if we can name a time when a female ought to have become nubile, it is safe to say that in two years from that time her pelvis will admit of no further development. If the means that relieve menischesis are powerless after a certain time, it remains to inquire if there are any others that can achieve the end. If we take, for instance, the much-vaunted and frequently employed arsenico-chalybeate treatment, we know that if properly directed it will relieve the menischesis, and by secondary action give rise to the development of the pelvis, always provided that the patient is so young that her pelvis is not anchylosed. One want, therefore, is a remedial agent which shall act on menischesis with contracted pelvis in the same way as the combined use of iron and arsenic does on the former alone.

In the pelvis of the menischetic woman at any age, we have the general characteristics of the pelvis of a child. More than this, I think I have satisfactorily demonstrated in my personal research that in many of its essentials the pelvis of the menischetic woman of twenty years is more child-like than is that of the menischetic girl of fourteen or fifteen. Perhaps the most rational explanation that can be given of this is to be sought in the probable fact that at fourteen or fifteen the pelvis makes an effort to expand, if we may so speak, which effort is not undertaken in the pelvis of a woman five or six years older. Undoubtedly, then, we should direct our efforts against menischesis in the girl of fifteen more zealously than in the woman of twenty, but in the latter case we may still look for mitigating circumstances. If the pelvis of the woman of twenty years is more like the pelvis of the child of six than is that of the girl of fourteen, it is only because the former has discontinued its efforts at expansion. We place in one class the woman of twenty and the child of six, eight, or ten, and in a second class the girl of fourteen. By analogy we reason that, if, in any measure, certain means will provoke premature nubility in the child, that same means will, if rightly exerted, cause relief to the menischetic woman of twenty. Agents, hygienic or therapeutic, which have been freely used by the child which is precociously pubescent may succeed in relieving menischesis in the advanced stage of that disorder in young women.

Reasoning in this way—and by this reasoning providing for prophylaxis as well as therapeutical management—I instituted some inquiries some time since, as to what the diet, hygienic surroundings, and condition of prematurely nubile girls had been. In this study I have had the valuable assistance of several gentlemen whose researches have been more satisfactory than mine, and to whom my acknowledgments are due. To better illustrate what I have to present, it would be worth our attention to cite a few instances in point. An authority on the subject—Delioux, I think—speaks of the extraordinary precocity of the Styrian girls, who from childhood to old age are confirmed arsenic-eaters, and who at eight or ten years are salacious and perfectly nubile. Without doubt, the arsenic aids in producing the functional activity of the ovaries, but the mere fact of being an arsenic-eater is only one of several to be taken into account, as I find it stated that those Styrian girls who are habitual eaters of arsenic, but are employed in sedentary or extremely fatiguing pursuits, are not as apt to be prematurely nubile as are others who are in easier circumstances and better fed. In our own country almost every close student has noticed that menstruation occurs earlier among girls who live out of doors as a rule, and who have a robust constitution and an excessively sanguine temperament. Again, we know that in New Orleans or Havana puberty is more precocious than it is in New York, the fact being attributed to variation of climate.

Diet is perhaps as potent a favoring factor as climate, residence, constitution, or drugs. With girls who are early nubile, the food that they are accustomed to abounds in nitrogenous and tissue-building material, while in girls who are menischetic or prone to dysmenorrhœa the diet is hydrocarbonaceous in nearly every case. Greatly in advance of other articles of food which tend to act in determining nubility are the phosphates. Girls accustomed to drinking the water of chalybeate springs are rarely if ever menischetic, and in many instances menstruate as early as the tenth or eleventh year. In the districts near the German springs of Schwalbach and Alexisbad, this is especially so. Strange to say, it is reported that girls who reside in the vicinity and drink habitually of some of the several chalybeate springs of Lauderdale County, Alabama, are ofttimes examples of tardy menstruation. Yet in these cases, although the menses are delayed, there is some ovarian activity, inasmuch as women who have never menstruated have married and borne children, the fact proving that the ovarian excitement, although not provoking a menstrual result, was potent enough to cause a normal pelvic increase.

A friend of mine has informed me that girls who are in the habit of living extensively upon buckwheat cakes are prematurely nubile! Testimony to warrant this is wanting, however, although it has long been a common observation of poultry raisers that pullets fed upon this grain ovulate several weeks earlier than others that have had different food. Besides this, we know that water-pepper (polygonum hydropiperoides), a plant allied to buckwheat (p. fagopyrum), has a distinct and definite action on the ovaries. Equally as curious and unauthenticated is the somewhat common impression that girls who eat inordinately of parsley develop early an extraordinary ovarian activity. Another reputed agent of the same kind is the tops and tender leaves of the savin (juniperus sabina), which are eaten as a condiment by the women of some Dakota tribes, who are said to become in consequence precociously capable of child-bearing.

Other remedial agents may be collated, but to do so would not be to the point. Admitting, then, as already suggested, that those remedies, climate, diet, etc., which are provocative of premature nubility, have an influence in preventing menischesis, it is probable that such means, if pushed far enough, will relieve the last-named condition when already established. With this end in view, I have advocated and employed such agents with success, in a defined line of treatment. My advice to menischetic patients at the North, who have already passed their teens, is to go South—to Bermuda, Florida, Virginia, or New Orleans, and spend not less than one year there. Then, while in that climate, to live generously on food which abounds in nitrogenous principles, with an abundant use of phosphates and of a modicum of albuminous material. Daily and well-ordered exercise is essential meanwhile. In regard to drugs, *iron* is the great and almost indispensable remedial agent. I give it without sparing; though in some measure its place may be indirectly taken by residence in the vicinage of chalybeate springs where the water can be freely and exclusively drank. In this country the sweet chalybeate springs in Alleghany County, Virginia, are undoubtedly the best; while, if the patient's means will admit of foreign travel, one of the best of the European springs is that of Schwalbach, Nassau. There is a tendency among English physicians to a prejudice in favor of some of the English springs, but the beautiful scenery and climate of Nassau tell in favor of its waters, and the same may be said of the Virginian springs.

With iron I prescribe arsenic and apiol. An excellent formula is: ℞. Apiol ʒij, liq. potass. arsenitis f.ʒj, tinct. ferri chlorid. f.ʒij; syrup. f.ʒiij. M. Take a teaspoonful thrice daily before meals for one week, and alternate with simple chalybeate treatment.

To achieve anything of success, this or any other treatment must be long continued, and every case must be regarded as curable.

Ovarian atony may be cured by static electricity, and galvanization of the articulations is said to be an excellent means of relieving anchylosis. Although this may be doubtful, it is worth while to give electricity a trial. Other remedial measures, such as those that are named above, are addressed to the pelvic contraction solely through a constitutional basis. If electricity will directly remedy the contraction, it will be a valuable adjuvant to recognized therapeutic and hygienic treatment.

I believe that menischesis with pelvic contraction can be *cured.* I am led to think—and I trust that experience will prove—that we are coming to a time when a natural delivery can be had through a once simply contracted pelvis, without resort to symphyseotomy, Cæsarean section, laparo-elytrotomy, mutilation of the fœtus, or any instrumental operation, possibly not excepting the use of the forceps.

Editorials.

THE PHYSICIANS' MUTUAL AID ASSOCIATION.

It is now upward of twelve years since the New York Physicians' Mutual Aid Association was incorporated, and in that short period, as we learn from the last annual report of its Board of Directors, it has accomplished such an amount of good that we think some account of its scope and its works may be of interest to the profession in general. Possibly our *confrères* in other cities may thereby be led to devise similar organizations for relieving the families of those of their number who may perish before they have yet secured a competence.

The association furnishes pecuniary aid to the widows and children of its deceased members, or, in the absence of these, to other near relatives previously dependent on them; also, in cases of special need, to its sick members. Any regular practicing physician, or teacher or professor in a medical school, being under sixty years of age, in good health, and living in New York, Kings, Queens, Richmond, or Westchester County, may be admitted to membership. On the death of a member, an assessment of one dollar is levied upon each survivor who was under fifty years of age when admitted, and one of two dollars upon each of those who were admitted when over fifty years old.

At the date of the report the association was made up of three hundred and fifty members. Precisely how many of these are subject to the two-dollar assessment we do not know; but, since there were six deaths during the year, and, since the sum of $2,405·20 was paid the estates of deceased members during the same period, we infer that each family received about four hundred dollars. This sum, to be sure, is not large, but it is paid at once, without any vexatious delays. Who shall say in how many instances it suffices for immediate wants, enabling the widow and children to tide over the period that must ordinarily elapse before other sources of money become available, and thus doing away with the necessity, that often stares them in the face, of disposing of some little possessions at a disadvantage? But, much good as this little sum has accomplished in many cases, the profession have it in their power to increase it many fold; and that it is not so increased is by no means to our credit as a body. Doubtless there are many whose families are amply secure against want. Let them, nevertheless, join the association, pay the trifling assessments punctually, and direct that at their decease the sums coming to their estates be given back to the association, to increase its permanent fund. There are others whose security, we fear, is more fancied than real; should their families really need the money, by joining the association they will have provided for its payment; should their trust prove well founded, the course just suggested may be followed—in either case they will have done a graceful act. To the great majority of our craft, those who by incessant hard work barely manage to keep their expenses within their income, we would still more pointedly urge the duty of membership.

It is gratifying to note that the finances of the association show the results of excellent management. The "contingent fund," which during the year amounted to $502·85, is made up of initiation fees (two dollars each) and five per cent. on each assessment. The "assessment fund" amounted, November 1, 1879, to $511·97. We are under the impression that it usually amounts to about this sum. Its object is merely to enable prompt payments to be made, without waiting for the whole amount of any one assessment to be collected. At the date of the report the "permanent fund" amounted to $6,254·55, having been augmented during the year by two gifts, of five hundred dollars each, by Dr. A. F. Sterling and Dr. Abram Dubois. At its present rate of increase, this fund bids fair to become a source of considerable income within a few years. During the last six years, says the retiring President, Dr. Mark Blumenthal, to whose devotion and executive ability the association largely owes its prosperity, it has distributed among the families of deceased members $12,960·51, and since its organization, $20,770·80.

Reviews and Literary Notes.

Osteotomy, with an Inquiry into the Etiology and Pathology of Knock-Knee, Bow-Leg, and other Osseous Deformities of the Lower Limbs. By William Macewen, M. D., Surgeon and Lecturer on Clinical Surgery, Glasgow Royal Infirmary. London: J. & A. Churchill, 1880. Pp. xvi–181.

Since the adoption of Listerism, operations which formerly were considered too hazardous to be thought of are now performed with safety. This is especially true of section of bone for the relief of deformities. Subcutaneous osteotomy is now performed with as little risk as the opening of an abscess or the section of a tendon. The work before us is the first that has appeared on this subject, and is written by one whose great personal experience entitles him to speak with some authority. It deals only with deformities of the lower extremities, and is divided into two parts, the cause, and the treatment by osteotomy of deformities of the lower limbs. Distortions of the thigh and leg may again be divided into those due to disease of the articulations, and those due to change in the shape of the bones. To the former belong anchyloses at an angle after hip- or knee-joint disease; to the latter genu valgum, genu varum, and bow-leg.

Our author attributes all curvatures of the lower extremities, as well as genu valgum and genu varum, occurring before the twentieth year, to rickets, traumatic cases of course excluded. There is no difference of opinion among surgeons in regard to the cause of these deformities appearing before the fifth or sixth year, but these changes coming on during adolescence have generally been considered as due to some other cause; in other words, the advent of rickets after the fifth or sixth year is denied. Dr. Macewen considers that this condition of the bones may, under certain conditions, be developed any time during the period of growth, and in proof of this statement gives the history of three patients in whom symptoms of rickets, namely, pain in the limbs, loss of appetite, loose and fetid stools, profuse perspiration about the head at night, painful enlargement of the extremities of the bones of the forearm and of the distal end of the femur, followed in one case by bow-legs, in another by knock-knee, came on, one at twelve, one at fifteen, and one at eighteen years of age. Whether this is always the case in knock-knee coming on after the tenth year, further investigation must determine. It is, however, a fact which we have seen exemplified in cases under our own observation, and which the experience of others has fully established, that genu valgum or varum coming on during adolescence has always been preceded by some debilitating cause, such as scarlet or typhoid fever, malnutrition, etc.

In the adult normal femur, the internal condyle is about a quarter of an inch longer than the external, and any change in their real or apparent length must alter the long axis of the tibia in its relation to that of the femur. The two condyles may be of normal length, but the whole epiphysis may be twisted on the diaphysis of the femur so that the external condyle is on a much higher plane than the internal; the internal may be lengthened from half an inch to an inch and a quarter; the external condyle may be abnormally small or flattened; or the articular ends of the femur may be in all respects perfectly normal, but the inner head of the tibia may be higher than the outer, thus throwing the long axis of the leg outside of the normal line of the limb. The condition of the bones in genu varum is somewhat different: while in some cases there is a depression of the external condyle, we more frequently find a bowing outward of the shafts of both femur and tibia, so that the two limbs may describe a complete circle. Dr. Macewen does not believe that muscular contraction is ever an element in the cause of rachitic curves.

Changes in the shape of the tibia and fibula may be either with the convexity forward, lateral, or antero-lateral; the curve may be confined to the lower third, or may involve the whole shaft. The author considers that tibial curves belong to the first two or three years of life, and that few originate after the third year, though, when once formed, they may increase in later years. In regard to the treatment of this latter class of deformities, he advocates the use of braces while the bones are soft, but states that they are worse than useless after the bones have become hard. Correction can then be made only by bone-section. Osteotomy may be done either with a chisel or with a saw; the former is generally preferred, because there is less disturbance of the soft parts in its use, and there is no bone dust that may act as a foreign body in the wound. Chisels for osteotomy must be made of the best steel; they should be very sharp, and so tempered that the cutting edge will neither turn from being too soft nor break from being too hard. They should be made of the shape of a long wedge, resembling somewhat the blade of a knife. It is also well to have a mallet larger and heavier than those ordinarily used by surgeons. For bow-legs, a simple osteotomy of the tibia and fibula at the point of greatest curvature, then putting up the limb in a straight position, is all that is required. For anterior curvatures, if they are pronounced and angular, the removal of a V-shaped piece from the anterior aspect of the tibia is necessary, with a simple osteotomy of the fibula.

Admitting that the immediate cause of genu valgum is a change in the relations of the articular ends of the bones forming the knee joint, the problem to be solved is, How can the position of the internal condyle be so changed as to allow the long axis of the tibia and fibula to correspond with that of the femur? There have been four cutting operations devised to accomplish this: two on the internal condyle (Ogston's and Reeves's), one a double osteotomy (Barwell's), and one a section of the shaft of the femur (Macewen's).

Ogston makes a section of the internal condyle with a saw, the joint being opened in a line extending from about an inch above the line of the epiphysis, downward and outward, to a point just inside of the intercondyloid notch. The detached condyle is then slid up so as to allow the tibia to assume its normal position. Reeves accomplishes the same result by chiseling off the internal condyle in the same line as in Ogston's operation. It has been claimed that in Reeves's operation the joint is not opened, but it is very doubtful whether it is possible to slide up the condyle, after partial section, without interfering with the joint, even if it is not entered by the chisel. Mr. Barwell advocates a double osteotomy—one on the shaft of the femur, by which half of the deformity is corrected, and after a few weeks a section of the tibia, when the limb is brought into a straight position. Dr. Macewen, while assigning the same cause for genu valgum, accomplishes the same result by making a section above the epiphysal line in the following manner: A longitudinal incision is made at a point where a line drawn transversely across the long axis of the limb, from a point a finger-breadth above the superior tip of the external condyle, meets a line drawn longitudinally half an inch in front of the adductor magnus tendon. This makes the line of section entirely above the epiphysis; the femoral artery is protected by the adipose tissue lying between it and the bone; it is above the internal superior articular artery, and in front of the branch of the anastomotica magna. The section is made at a right angle to the long axis of the bone.

In regard to these three operations, it should be distinctly understood that all are followed by equally good results, and, as far as a fatal issue is concerned, we can not find that there is any difference between them. Of the three, Ogston's is theoretically the most dangerous, yet we fail to find a fatal case in which the result can be traced to the operation. There has been, it is true, some limitation of motion after an Ogston's; yet improper after-treatment, such as keeping the limb too long in a fixed position, may have been its cause. Of the three, Ogston's appears to be the least to be advised. In regard to Reeves's, the same statement does not seem to hold true, notwithstanding the objection raised by Macewen, that "the operation results in an uneven articular surface, and that the resisting ligaments and tendons on the outer aspect of the joint are left untouched"; and that there is some doubt in his own mind upon this point is evident from the following statement: "There can be no doubt that the deformity can be successfully obliterated by this operation [Reeves's], but immunity from ill effects has in a considerable degree been due to the bounty of Nature, who does her utmost to remedy the defect spoken of." In regard to suppuration after osteotomy, it only occurred in eight cases of the 367 limbs operated upon. Since the volume went to press he has done 83 more, making a total of 450. He records three fatal results, from causes in no way connected with the operation.

It seems to us that the best operation for the correction of genu valgum is that of the author. It is much easier to perform than Reeves's, because one knows just where the chisel is. The latter is a difficult one to perform, especially to those not familiar with the use of the chisel in bone-section. It may seem very easy to divide the internal condyle, as laid down by Mr. Reeves, but at best it is working in the dark. For these reasons we have abandoned it. We think that an incision made through the skin immediately down upon the sharp ridge of bone running upward and backward from the tubercle for the attachment of the adductor magnus is an easier one to make than the line advocated by Macewen, namely, half an inch in front of the tendon of the last-mentioned muscle. From this point we should chisel forward and outward.

Osteotomy for angular deformity at the knee joint he has performed six times. If the deformity is great, he advocates two sections done at one time—one on the femur, made on the inner side of the rectus tendon, on the line where osteotomy for genu valgum is done, while the tibial section is made over the anterior ridge, just below the tubercle. It would seem to be an operation attended with much less risk than an excision of the knee joint. Macewen advocates the use of strict antiseptic precautions in all operations. In this we can not agree with him. The use of the spray seems to us unnecessary, and we think that wounds close just as rapidly, and that as perfect results are obtained, without as with its use. Washing out the wound with a solution of carbolic acid, one to forty, is all that is necessary.

In closing we can not but congratulate the author on the very satisfactory manner in which he has treated the subject, and would cordially recommend the volume to every one who is interested in osteotomy.

Lectures on the Surgical Disorders of the Urinary Organs, delivered at the Royal Liverpool Infirmary. By Reginald Harrison, F. R. C. S., Surgeon to the Infirmary, etc. Second edition, considerably enlarged. London: J. & A. Churchill, 1880. Pp. xvi–399.

These lectures will not fail of a cordial reception among all those who are interested in the study of urinary diseases. They commend themselves as well by their agreeable tone as by the thoroughly able manner with which their subject matter is presented. The writer is fully master of his subject. Few surgeons enjoy equal facilities for the study of urinary diseases, and the book before us is sufficient evidence that the author has turned these facilities to the best account.

Though the second edition of the lectures follows only two years after the first, it has been so enlarged and improved as to become a work of much greater importance. The bulk of the book has been increased by two hundred pages, embracing twelve entirely new chapters. The new material includes a chapter on The Examination of Urine, another on Irritable Bladder, and several important ones on the Surgery of the Urinary Organs.

In the chapter on the examination of urine the writer refers to the importance of determining, when the urine is alkaline, whether the reaction is due to a volatile or a fixed alkali. "The fixed alkali," he observes, "is for the most part met with in persons with feeble powers of life, persons who invariably improve in condition with a generous diet and tonics containing one or other of the mineral acids. To give acids with the view of correcting both the health and the urine of the patient who always has in his bladder a residuum of urine, necessarily of an alkaline reaction, due to decomposition, is worse than useless; yet I have seen this done and justified on the ground that the urine was alkaline, no thought being attached to the consideration that the cause of the alkalinity was essentially one that could only be removed by mechanical means." While the efficacy, or necessity even, of the "mechanical means" in such a case need not be questioned, we are, nevertheless, not sure that the mineral acids will not be of material assistance, or at least will not tend to prevent the urine from becoming alkaline after it has once been made sweet. Such, at least, is the opinion expressed by Billroth in a recent article. With regard to the drugs copaiba and cubebs, the writer maintains that they render the urine acid only by disturbing digestion, and that whenever this occurs during their administration for urethritis their beneficial effect ceases, the acidity of the urine tending to aggravate the inflammation. Thus, he thinks, is explained the advantage of combining these drugs with an alkali.

We note with a little surprise that Harrison still adheres to the plain, cylindrical bougie in preference to the bulbous instrument for the purpose of diagnosticating stricture. Why he rejects the latter instrument is not very clearly stated. He says, "If a surgeon can not by this" [the plain bougie] "obtain all the information he requires about the urethra, I am sure he will not be assisted by any of the bulbous or olive-headed instruments which are vaunted for this purpose." Surely most surgeons who have much to do with stricture of the urethra find advantages in the use of the bougie à boule, in respect of precision in diagnosis, which pertain to no other instrument.

In the chapter on irritable bladder the writer gives some interesting examples of frequent micturition due to no structural change in the urinary organs, nor to any reflected action, but purely to a nervous condition. He observes: "I have known many persons, in anticipation, for instance, of a long railway journey, go on for days previously micturating every few minutes in view of an imaginary inconvenience to which they might be temporarily exposed." "For many years I was constantly consulted by an elderly gentleman who suffered in this way; the dread of a fortnightly journey to London for business purposes manifested itself thus until a habit was acquired which seriously threatened the patient's health, and yet there was nothing but these combined influences" ["nerve" and "habit"] "to explain matters. All sorts of expedients only seemed to add to his distress, for fear of their failing, until on the introduction of the Pullman system of railway carriages I suggested their use, which was at once followed by a total cessation of this unpleasant symptom."

The chapter on the formation and physical constitution of urinary calculi is a very interesting one. The author adopts the theory of molecular coalescence dependent upon a colloid medium in explanation of the formation of calculi, a theory which has been advanced especially by Rainey and Ord. The writer claims that calculous patients do not necessarily excrete more uric acid than others, but that there must have been some irritation of the urinary organs to give rise to a mucous or other secretion capable of furnishing the colloid material which may determine the aggregation of the particles of which the stone is composed. Thus, the frequency of stone in regions where "hard waters" are drunk is explained, not on any chemical or physiological grounds, but simply from the physical effect on the urinary organs, the irritation of which gives rise to an undue secretion of mucus, thus furnishing the essential element for the formation of calculus.

The surgery of stone in the bladder receives much more attention in this than in the first edition. As to the conditions which should decide between the operations of lithotomy and lithotrity, the author mentions the following: The former is "*the* operation for children," though in some cases he performs lithotrity. The former operation is suited also to cases where the stone measures two inches or more in diameter, unless it be soft, in which case a larger stone may be crushed with safety. When with a large prostate there is sacculation of the bladder, he prefers lithotomy. Enlarged prostate will demand one or the other operation, according to the facility with which the stone can be seized. Advanced cystitis or an atrophied or paralyzed bladder, though unfavorable to either operation, does not preclude lithotrity. In case the stone were of such a character that it could be crushed and removed entirely at one sitting, the writer would prefer the latter operation. In describing the operation of lithotomy he speaks of the external incision as follows: "In my earlier cases of lithotomy I adopted Fergusson's incision" [an inch and three quarters in front of the anus]; "I have, however, in my subsequent experiences gradually approached nearer the anus, and now concur with the directions of Coulson [one inch before the anus] in considerably lessening the distance between the commencement of the incision and the anal aperture. For the gradual change in my mode of operating I can not assign any other reason than because by the latter method I find it easier and quite as safe to enter the staff, safer, in fact, so far as the bulb is concerned. The commencement of my incision now almost corresponds in plane with the spot where I am desirous of striking the staff. On no other ground than natural selection can I explain the practice which I have gradually arrived at."

Concerning lithotrity, we observe a decided change from the views expressed in the earlier edition. The advances made in this operation by Bigelow, whose apparatus, by the way, Harrison was the first to introduce into England, have wrought a marked change in the writer's practice. But, as comparatively few cases are referred to, we infer that his experience with the new method has not yet been extensive. Evidently, however, he is very favorably disposed to it.

We have referred to but a few of the many interesting points in the book. In the main, the opinions expressed are eminently conservative and judicious, and, furthermore, they do not lack the support of personal experience.

A Text-Book of the Physiological Chemistry of the Animal Body, including an Account of the Chemical Changes occurring in Disease. By ARTHUR GAMGEE, M. D., F. R. S., Professor in the Victoria University, Manchester, etc. With Illustrations. Vol. I. London: Macmillan & Co., 1880. Pp. xix–487. [Price, $4·50.]

AMONG the recent works treating of this now assiduously cultivated field, none have afforded us greater pleasure in reviewing than this one, to which we can give our unqualified praise. In the present volume the chemical composition of and the chemical processes relating to the elementary tissues of the body are treated of, the blood, lymph, and chyle being included. The author has allowed himself the liberty of digressing, whenever and wherever he thought it necessary, into the cognate sciences of anatomy, physiology, and practical medicine. Beginning with a discussion of the proteids, or albuminous bodies in general, dialysis and examination by the polarizing apparatus are dwelt upon, succeeded by a consideration of the chemical reactions, in which the author closely follows Hoppe-Seyler. In speaking of the composition of the proteids, he is forced to the confession that, great though the progress of organic chemistry has been, and remarkable as the development of our knowledge of the constitution of bodies has been, we are yet far from being able to unravel the constitution of such complex bodies as the proteids. The author groups the chief proteids in seven classes: 1. Albumens, including serum- and egg-albumen; 2. Peptones; 3. Globulins, including myosin, fibrinogen, and paraglobulin; 4. Derived albumens, including acid and alkali albumens; 5. Fibrine; 6. Coagulated proteids; and 7. Lardacein, the so-called amyloid substance.

He next discusses the subject of blood, to which almost half the present volume is devoted, and a more painstaking chapter we have never read. After a discussion of the normal constituents of blood, the changes which the blood undergoes in disease are dwelt upon at very considerable length. It is here that the general practitioner, who finds a spare moment to devote to science, will find stated ready at hand all the changes which the blood undergoes in any of the important diseases, and also the most ready tests for verifying them himself. In this chapter, under the subject of diabetes, the author rejects the theory of a distinct acetonæmia, a view which is accepted by the most recent observers. He assists us but little by the description of any new methods for the recognition of old blood (?) stains. He recommends the use of the microspectroscope, but states that the investigation is reliable only when carried on by a person thoroughly familiar with the various absorption spectra of coloring matters. Lymph and chyle follow in the succeeding chapter. Pus, which is next treated of, has its chemical constitution fully brought out. Under the discussion of the connective tissues, the author states that he believes chondrin is not a pure substance, but a mixture of gelatin, mucin, and salts. He also asserts that "*all* the tissues belonging to the connective-tissue group possess a common chemical character, in that their ground-substance is in all cases a body transformed into gelatin by the prolonged action of boiling water; this being mixed in greater or less proportion with mucin, which, as we have shown, undoubtedly plays the part in many forms of connective tissue of a connecting or cementing substance." In connection with bone, so far as experimental pathology and chemical research have gone, he believes, in reference to rickets, that the chemical theories do not stand the test of criticism. The chapter on contractile tissues enters thoroughly at first into the histology, and next into the physiological chemistry, of muscle changes. The author adopts Hermann's theory, that the chemical action in contracting muscle is not a true oxidation, but rather the splitting up of some complex body, with the formation of simpler, more stable substances. The last chapter is devoted to nervous tissues. The author has endeavored to write in the interest of the truly scientific student. He has, he states, as far as possible, tried all the experimental processes mentioned in the work, and throughout has incorporated the results of independent research. Although entitled Volume I, the book forms, nevertheless, an independent work. Its merits abound throughout, its author deserves our best praise, and the volume is heartily recommended not only to the scientific student, but to the intelligent practitioner, who would ascertain the present status of physiological research.

Rocky Mountain Health Resorts. An Analytical Study of High Altitudes in Relation to the Arrest of Chronic Pulmonary Disease. By CHARLES DENISON, M. D., etc. Second edition. Boston: Houghton, Mifflin & Co., 1881. Pp. xvi–192.

THE appearance of a second edition of this treatise is a sufficient proof that, to use a trade phrase, it has "met a want"; and, indeed, its contents merit a wide circulation. Dr. Denison is known, through several valuable contributions to medical literature, as a careful and conscientious observer, and the present work, although its data bear most particularly upon the advantages of Colorado, may fairly claim place in the physician's library as a scientific study of the climatology of high altitudes. There are few subjects on which the ordinary medical mind is more unsettled than in relation to the choice of climate for consumptives. Regardless of the character or stage of the disease, one practitioner will send all his phthisical patients to Florida; another looks for pulmonary balm only in Minnesota; a third exiles his *poitrinaires* to the Riviera. From the mid-ocean level to mountain peak, almost from the equator to the pole, each "health resort" has its enthusiastic, pamphlet-publishing resident physician, and its special circle of medical patrons.

In all climates, and in all instances, an open-air life is the first desideratum for the consumptive; but the qualities of the air as regards barometric pressure and humidity must be suited to the requirements of individual cases; and, while Dr. Denison regards dryness and somewhat lessened pressure as generally indicated, he would exclude from high altitudes patients with active catarrhal and tuberculous disease, especially with suspicious laryngeal complications; those suffering from marked cardiac derangement; chronic third-stage patients, with "one third to one half of the lung surface involved in diseased changes," and with much constitutional disturbance, or easily excited hæmorrhage from a cavity; finally, "the more an invalid feels obliged to remain in confined apartments, just as the more he is deprived of his normal breathing capacity, then the more are extreme elevations unsuitable for him." On the other hand, the greatest benefit may be expected "in the commencement of chronic inflammatory and hæmorrhagic cases, and generally in fibrous phthisis in young and middle-aged subjects with little constitutional disturbance."

Of the therapeutic influence of "diathermancy"—i. e., the conducting power of the atmosphere—little can as yet be said, except as it is to a great extent dependent upon dryness and rarefaction. Dr. Denison's observations have led to the general rule that there is "one degree greater difference between the temperature in sun and shade for each rise of 235 feet." The author's hypothesis, that the chief benefit of out-door life arises from "the continued mediumship of the human body between the *negative* ground and the *positive* air," is rather overstrained, as, indeed, are most of his views of atmospheric electricity. But, setting aside its few weak points of theory, the book contains enough exact and carefully analyzed observations to render it a useful addition to the literature of a subject of which our knowledge is still far from perfect.

Yellow Fever: its Ship Origin and Prevention. By Robert B. S. Hargis, M. D., Pensacola, Florida. Philadelphia: D. G. Brinton, M. D. Pp. 76–iv.

The principal drawback to real scientific progress in almost all directions is the apparently innate propensity of the inquiring mind to evolve from inner consciousness more or less plausible theories to account for phenomena which can not, in the present state of our knowledge, be accurately explained. In no department of inquiry has this tendency been more strikingly manifested than in that which relates to the etiology of zymotic diseases, and in few is there a wider range of hypothetical opinion than as regards the origin and *modus propagandi* of yellow fever. To this already voluminous discussion comes Dr. Hargis to add an argumentative brochure, republishing three papers in support of the not quite new doctrine that yellow fever is not a land endemic anywhere, but is spontaneously generated in the foul holds of vessels, as the "ship fever of the tropical Atlantic." This view, on which the author began to insist some twenty years ago, was more than hinted at by several of his predecessors in the last century, and has been recently sustained by Professor Gamgee. According to Dr. Hargis, the sulphureted hydrogen and ammoniacal vapors from a foul bilge, acting in the calm of the tropical sea, are alone capable of originating the malady, and he is confident that the "nameless disease" of which many seamen perish during such voyages is "generally yellow fever." He altogether discards the "germ theory," and holds that the period of incubation is "very brief and extremely uncertain," the premonitory symptoms of the disorder sometimes declaring themselves immediately upon exposure. Free ventilation, cleansing, and liming of the bilge and hold are regarded as sufficient means of prevention, but the author is an ardent advocate of Professor Gamgee's further precautions in the way of refrigeration and impermeable varnishes.

To attempt to weigh the actual merits of Dr. Hargis's arguments would necessitate a review of all the recent contributions to the literature of yellow fever, including the reports of the National Board of Health and the somewhat acrimonious controversies arising therefrom, and the recent papers and debates at the meeting of the American Public Health Association at New Orleans, which tend to show a wider diversity of opinion than we had previously supposed to exist in respect, not only of the pathogeny or etiology, but even of the diagnosis of the disease in question. For such a tedious undertaking our readers would probably be far from grateful; and, in consideration of the insufficiency of scientific evidence on any of the most important points at issue, it is best, perhaps, to dismiss, for the present, Dr. Hargis's theory with the Scotch verdict "not proven."

Short-Sight in Relation to Education. An Address delivered to the Birmingham Teachers' Association, November 2, 1880. By PRIESTLEY SMITH, Ophthalmic Surgeon to the Queen's Hospital, Birmingham. Birmingham and Leicester: The Midland Educational Company, 1880. Pp. 33.

THIS little brochure gives a very brief but clear statement of the connection existing between education and short-sight, as of cause and effect, of the alarming spread both of actual short-sightedness and of the tendency to its development, and of the necessary steps to be taken to bring this tendency within the narrowest possible limits. After a brief account of the structure and function of the eye, and the statement that a short-sighted eye is too long, Smith notes: that this elongation is never present at birth, that it is a morbid condition due to overstretching of the tunics of the eye, and that the predisposition to become short-sighted is strongly hereditary. This elongation progresses slowly but surely by a yielding of the sclera, under the combined influence of convergence of the eyes and bending of the head. The author then gives the results of his own examination of school-board children, and of students in training-colleges, and compares them with the results of the examinations of other experts. He then calls attention to the physical fact that an impaired physique brings with it, among other evils, an impaired resistance to the active causes of short-sight, and emphasizes the importance of placing a reasonable limit upon the time which the scholar spends daily in near work. He then discusses the requirements for the amount of work that must inevitably be done, viz.: 1. The object looked at must be well illuminated. 2. It must be of a nature to be easily distinguished. 3. It must be so placed as to be viewed without stooping. 4. It must be viewed at a distance of not less than ten inches from the eyes. The construction of the school-building and class-rooms is briefly considered, and proper suggestions are made as to the internal arrangement of the latter with reference to light, air, and relation of the desks to the seats. He advises that slates be abolished, and suggests cheap paper in place of them. The address is a direct appeal to the educators of youth from the physiological standpoint.

Dr. Paul Börner's *Reichs-medicinal-Kalender für Deutschland auf das Jahr* 1880. *Idem, auf das Jahr* 1881. Cassel: Theodor Fischer.

Although the author of this work, the accomplished editor of the "Deutsche medicinische Wochenschrift," modestly declares that it is not his own, but rather that of the whole profession in Germany, any one who has ever undertaken a compilation remotely approaching it in scope will readily admire the systematic, and, so far as we can judge, accurate manner in which Dr. Börner has put forth a comprehensive directory or register of the German profession, together with a vast amount of such information in regard to the educational and eleemosynary institutions of Germany as it concerns physicians to possess. The relations of medical men to the army and navy and to the civil administration are fully set forth, as well as a multitude of matters pertaining to individual physicians and to the profession as a whole. Indeed, we are at a loss to imagine upon what point a seeker after information in regard to the public relations of physicians in Germany could fail to find satisfaction in the pages of these volumes. To the many German physicians in our country, and to those Americans who intend to visit Germany for professional purposes, the work seems to us invaluable. Moreover, one of the volumes of each year's set, intended for the pocket, contains blank pages for memoranda, posological tables, and the like—in short, very much the contents of the various forms of "visiting list" so much used by practitioners in this country, but far more complete and elaborate.

Differential Diagnosis. A Manual of the Comparative Semeiology of the More Important Diseases. By F. de Havilland Hall, M. D., Assistant Physician to the Westminster Hospital, London. Second American edition. Extensive additions. Edited by Frank Woodbury, M. D., Physician to the German Hospital, Philadelphia. Philadelphia: D. G. Brinton, 1881. Pp. 223.

Dr. Hall's original work was confined to diseases of the larynx, lungs, and heart. In the first American edition the scope of the work was greatly enlarged, and in this, the second edition, the effort has been to make it complete. As it now appears, it covers nearly the whole range of the strictly medical diseases, the fevers, diseases of the circulatory system, of the digestive organs, of the respiratory tract, and what are known as the diseases of the blood. It contains much valuable matter in a form easy for reference, and is especially adapted for the student preparing for examination. Much labor has been spent in its preparation, and for the purpose intended we know of no better work. The editor has shown good judgment in his condensations and selections of the salient points of each disease, and has a happy style of presenting the matter of the text, so that the eye is not wearied with a constant succession of tables.

Drainage for Health, or Easy Lessons in Sanitary Science. By Joseph Wilson, M. D., Medical Director, United States Navy. Philadelphia: Presley Blakiston, 1881.

The secondary title of this small work, which alone appears on the cover, is rather pretentious, the four brief chapters treating of the simplest rudiments of sanitary engineering as applied to soil drainage, farm-house and village drainage, sewerage, and the repair of leaking plumbers' work. Brief as these chapters are, they betray a tendency to diffuseness in the recountal of unnecessarily prolix dialogues. Nevertheless, the book is to be commended as presenting in an intelligible way as much information as is likely to be absorbed by the average bucolic brain on a subject of the most pressing importance to bucolic neighborhoods; and, although we can not congratulate the author on having quite fulfilled his "view of meeting the wants of sanitary engineers and members of boards of health," we cordially wish that his treatise may find a wide circulation throughout the rural districts, where it is sorely needed.

On the Use of the Cold Pack followed by Massage in the Treatment of Anœmia. By Mary Putnam Jacobi, M. D., and Victoria A. White, M. D. New York: G. P. Putnam's Sons, 1880. Pp. 76. [Price, $1·25.]

This work consists of a collection of observations upon cases of anæmia treated with the cold pack followed by massage, and an attempt to explain theoretically the improvement resulting. Ranke's formula is quoted: that a muscle must be fatigued before it can receive nourishment; and that this is so because an accumulation of "*acid* fatigue-products" in the muscle excites a more active osmosis from the *alkaline* blood. The authors observe an increase in the urine (both of water and of solids) during the pack, with a corresponding diminution in the same after the pack. In this way they arrive at the inference that hyperæmia of the deep muscles is excited by the pack, causing increased disassimilation and accumulation of "acid fatigue-products." This last stimulates osmosis from the blood, thus accelerating constructive metamorphosis. The opinions advanced are based upon physiological views rather more generally held in Germany than in this country. The careful histories of cases are very instructive.

A Pictorial Manikin, or Movable Atlas of the Human Body, showing the Positions of the Internal Organs by means of Superposed Colored Plates. By Professor G. J. Witkowski, M. D., Member of the Faculté de Médecine de Paris. English Translation of Text by Robert Hunter Semple, M. D., F. R. C. P., London, etc. With Introductory Essay and Explanatory Anatomical Index, by Professor D. A. Loomis, M. D., late Assistant Surgeon, U. S. A., etc. New York: Joseph Cristadoro, 1880. [Price, $5.]

Only the first part of this work has been sent us, namely, that which shows the anatomy of the neck and trunk. The publisher announces three other parts as ready: one on the throat and the mechanism of voice, speech, and taste; one on the female organs of generation; and one on the eye and the mechanism of vision. It is stated also that one on the male organs of generation, one on the brain and nervous system, and one on the ear and teeth, will soon be ready. We find the elastic drawings accurate, their component parts carefully put together, and the reference numerals and letters readily available. For teaching the rudiments of anatomy to those who are debarred from dissection, the work will no doubt prove of great value.

The Orthopragms of the Spine. An Essay on the Curative Mechanisms applicable to Spinal Curvature, exemplified by a Typical Collection lately presented to the Parkes Museum of Hygiene, University College, London. By Robert Heather Bigg, Assoc. Inst. C. E. London: J. & A. Churchill, 1880. Pp. x–149.

The author of this volume is a civil engineer, and we fail to see that he possesses any special knowledge of spinal curvature to qualify him to write a useful essay on this subject, any more than a physician's education would naturally qualify him to write a practical book on triangulation or railroad construction. The intention of the author was, no doubt, laudable, but a careful perusal of the work fails to discover anything practical, or to reward one for the time spent in reading it. The paper and typographical appearance are all that could be desired.

Diet for the Sick: Notes, Medical and Culinary. By J. W. HOLLAND, M. D., Professor of Materia Medica, Therapeutics, etc., in the University of Louisville. Louisville: John P. Morton & Co., 1880. Small 8vo, Pp. 68.

THIS is a handy little volume, whose aim is to be terse and practical. It is divided into three parts: 1. A discussion of different kinds of food with reference to their general properties and physiological relations; 2. Special dietaries in particular diseases, such as diabetes, anæmia, etc.; 3. Receipts, and general practical directions as to the best manner of preparing, etc. Important facts are recapitulated, which receive a fuller notice in larger works, and the pages are full of useful suggestions.

BOOKS AND PAMPHLETS RECEIVED.—Lehrbuch der hygienischen Untersuchungsmethoden. Eine Anleitung zur Anstellung hygienischer Untersuchungen und zur Begutachtung hygienischer Fragen für Aerzte und Chemiker, Sanitäts- und Verwaltungsbeamte, sowie Studirende. Von Dr. Med. C. Flügge, Privàtdocent an der Universität Berlin. Mit 88 Abbildungen im Text, 17 Tabellen, und 4 lithographirten Tafeln. Leipzig: Veit & Co., 1881. Pp. xviii–602. ═══ A Practical Treatise on Diseases of the Skin. By Louis A. Duhring, M. D., Professor of Diseases of the Skin in the Hospital of the University of Pennsylvania, etc. Second edition, revised and enlarged. Philadelphia: J. B. Lippincott & Co., 1881. Pp. 644. ═══ A Treatise on the Materia Medica and Therapeutics of the Skin. By Henry G. Piffard, M. D., Professor of Dermatology, Medical Department of the University of the City of New York, etc. New York: William Wood & Co., 1881. Pp. 351. [Wood's Library of Standard Medical Authors.] ═══ Columnæ Adiposæ, a newly described Structure of the Cutis Vera, with its Pathological Significance in Carbuncle and other Affections. By J. Collins Warren, M. D., Instructor in Surgery, Harvard University, etc. Cambridge, 1881. Pp. 28. ═══ Bovine Tuberculosis in Man. An Account of the Pathology of Suspected Cases. By Charles Creighton, M. D., Demonstrator of Anatomy in the University of Cambridge. With illustrations. London: Macmillan & Co., 1881. Pp. xi–119. [From the author.] ═══ Lectures upon Diseases of the Rectum and the Surgery of the Lower Bowel. Delivered at the Bellevue Hospital Medical College. By W. H. Van Buren, M. D., LL. D. (Yalen.), Professor of the Principles and Practice of Surgery in the Bellevue Hospital Medical College, etc. New York: D. Appleton & Co., 1881. Pp. vi–412. ═══ Coulson on the Diseases of the Bladder and Prostate Gland. Sixth edition, revised by Walter J. Coulson, F. R. C. S., Surgeon to St. Peter's Hospital for Stone, etc. London: J. & A. Churchill, 1881. Pp. xxx–607. ═══ Diagrams of the Nerves of the Human Body, exhibiting their Origin, Divisions, and Connections, with their Distributions to the Various Regions of the Cutaneous Surface and to all the Muscles. By William Henry Flower, F. R. S. Third edition. Philadelphia: Presley Blakiston, 1881. 4to, pp. 11. [Price, $3.50.] ═══ The Principles and Methods of Therapeutics. By Adolphe Gubler, M. D., Professor of Therapeutics in the Faculty of Medicine, Paris, etc. Translated from the French. Philadelphia: D. G. Brinton, 1881. Pp. 445.

═══ Contributions to Obstetrics and Gynæcology. By Alexander Russell Simpson, M. D., Professor of Medicine and Midwifery and the Diseases of Women and Children in the University of Edinburgh. Edinburgh: Adam & Charles Black, 1880. Pp. xii–347. ═══ Lectures on Syphilis. Delivered at the Harveian Society, December, 1876. By James R. Lane, F. R. C. S., Surgeon to St. Mary's Hospital, etc. London: J. & A. Churchill, 1881. Pp. vi–95. ═══ Drugs that Enslave. The Opium, Morphine, Chloral, and Hashisch Habits. By H. H. Kane, M. D. Philadelphia: Presley Blakiston, 1881. Pp. 8–17 to 224, inclusive. [Price, $1.50.] ═══ Aphorisms in Fracture. By Richard O. Cowling, M. D., Professor of the Principles and Practice of Surgery, University of Louisville. Louisville, Ky.: John P. Morton & Co., 1881. Pp. 70. [Price, 25c.] ═══ A Study of Transverse Fracture of the Patella. By H. Augustus Wilson, M. D., etc. ═══ Report on the Composition and Quality of Daily Samples of the Water supplied to London, etc. By William Crookes, F. R. S., William Odling, M. B., F. R. S., F. R. C. P., etc., and C. Meymott Tidy, M. B., F. C. S., etc. London: Wertheimer, Lea & Co., 1881. ═══ Indications of Character in the Head and Face. Illustrated. By H. S. Drayton, A. M. New York: Fowler & Wells, 1881. Pp. 48. ═══ John Hunter and his Pupils. By S. D. Gross, M. D., LL. D., D. C. L., Oxon., LL. D., Cantab., Professor of Surgery in the Jefferson Medical College, etc. Philadelphia: Presley Blakiston, 1881. Pp. 106. [Price, $1.50.] ═══ Discurso Inaugural, leido en 31 de Enero de 1881 en la Apertura de las Sesiones de la Academia del Cuerpo de Sanidad Militar de Aragon, por D. Ramon Hernandez Poggio, Subinspector Médico, etc. Zaragoza, 1881. ═══ Transactions of the American Ophthalmological Society, sixteenth annual meeting, Newport, 1880. ═══ Transactions of the Medical Society of Virginia, vol. iii, part 2. ═══ Beiträge zur gerichtlichen Medicin. Von Prof. Dr. Hermann Friedberg in Breslau. [Reprint.] ═══ Raffo Dott. Costantino. Due Casi di Chirurgia Pratica.—Litotrissia Rapida in una Sola Seduta, e di un' Ernia Inguinale Ovarica simulante Strozzamento Intestinale. [Reprint.] ═══ On the Micrometric Numeration of the Blood Corpuscles and the Estimation of their Hæmoglobin. By Mrs. Ernest Hart. [Reprint.] ═══ Osteotomia del Condilo Interno di ambo i Femori per Ginocchi Valghi; Morte 28 ore dopo la operazione. Pel Dott. Costantino Raffo. [Reprint.] ═══ Perityphlitis in Children, illustrating Points in the Differential Diagnosis of Hip Disease. By V. P. Gibney, M. D. [Reprint.] ═══ On "Kerion Celsi," a variety of Tinea Tonsurans. By I. Edmondson Atkinson, M. D. [Reprint.] ═══ Foreign Bodies in the Nose and Ear of Children, with Remarks on their Removal. By E. S. Peck, M. D. [Reprint.] ═══ Hemiopia, etc. By William Dickinson, M. D. [Reprint.] ═══ Soluble Compressed Pellets, etc. By H. Augustus Wilson, M. D. [Reprint.] ═══ Quarterly Report of Medical Officers, United States Army, with their Stations and Duties, as reported to the Surgeon-General, January 1, 1881. ═══ Twelfth Annual Report of the Board of Directors of the New York Physicians' Mutual Aid Association. ═══ Twenty-seventh Report upon the Births, Marriages, and Deaths in the State of Rhode Island, for the year ending December 31, 1879. Prepared by Charles H. Fisher, M. D. ═══ Third Annual Report of the State Board of Health of the State of Connecticut. ═══ Annual Report of the Directors and Medical Board of St. Michael's Hospital, Newark, N. J., January 1, 1881. ═══ First Annual Report of the Newark Charitable Eye and Ear Infirmary, Newark, N. J. ═══ Twelfth Annual Report of the Trustees of the Willard Asylum for the Insane.

Clinical Reports.

NEW YORK HOSPITAL.

Reported by Walter Mendelson, M. D., House Physician.

A CASE OF ABDOMINAL AORTIC ANEURISM TREATED BY TUFNELL'S METHOD; RUPTURE; DEATH.

(Service of Dr. CHARLES E. HACKLEY.)

On the 17th of May last a man presented himself at the hospital, having the following history: He was thirty-nine years of age, a native of this country, unmarried, and a clerk by occupation. He admitted using alcohol pretty freely, though not habitually to excess. Nineteen years before, he had venereal disease, but gave no history of any of the secondary symptoms of syphilis. He had never strained himself to his knowledge, nor received any injury. For the past two years he had suffered with symptoms of dyspepsia, consisting chiefly of flatulence, with a feeling of oppression in the epigastrium after eating. Occasionally he vomited. The bowels were, as a rule, constipated. For the past year the patient had suffered from severe aching pains, of an intermittent character, in the back and in the right side. Sometimes, though not as a rule, the pains were severe enough to keep him awake at night. Four months previous to admission he first noticed a hard, pulsating tumor situated in the epigastrium, just to the left of the median line, and beneath the free border of the ribs.

Examination showed him to be much emaciated and very anæmic-looking. On physical exploration of the abdomen, a hard, pulsating tumor was found in the locality already indicated. The tumor was overlapped by the left lobe of the liver, which could be felt, while making firm pressure upon it, to slip upward and away, leaving the aneurism immediately beneath the abdominal wall. The pulsation was not of a true expansile character, and was unaccompanied by any sensation of thrill. Percussion dullness extended six inches transversely and four and a half inches vertically. On auscultation, a loud systolic, followed by a somewhat softer diastolic, murmur was heard over the seat of the tumor. These sounds were not noticeably influenced by any change in the patient's position, and were almost imperceptible behind. The heart was enlarged, the apex striking the chest wall a little to the outside of, and about two inches below, the left nipple.

The patient was put upon light and easily digested food and advised to keep quiet, though not confined to bed. The bowels were kept open with laxatives. Under this treatment the dyspeptic symptoms almost completely subsided, and the man gained six pounds in weight. The pain also became very much less, indeed disappearing almost entirely. On May 31st it was decided to use Joliffe Tufnell's method of treating aneurism. This method, for the particulars of which Tufnell's very interesting little book* may be consulted by the reader, consists in placing the patient absolutely at rest in bed, and not allowing him to make any but the slightest exertions. He is not to be allowed to raise himself to the sitting posture at all, but, if prolonged lying on the back become irksome, rolling very gradually and gently to one side or the other may be resorted to. The diet, and especially fluid diet, is to be of the most restricted kind, and the following is the bill of fare given: *breakfast*, 2 oz. of bread and butter, 2 oz. of cocoa or milk; *dinner*, 3 oz. of boiled or broiled meat, 3 oz. of potatoes or bread, 4 oz. of water or light claret; *supper*, 2 oz. of bread and butter, 2 oz. of milk. The whole object of this method is, first, by prohibiting muscular exertion, to decrease the number and force of the beats of the heart, thus causing the blood to flow more slowly; secondly, by restricting the liquid portions of food especially, to produce a thickening of the blood. By these two means it is hoped to favor the deposition of layers of fibrine upon the walls of the sac, and thus aid those natural processes which, when they run their course unassisted, result in what is called a spontaneous cure.

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* "The Successful Treatment of Internal Aneurism and Consolidation of the Contents of the Sac." London, 1875.

The patient's case was carefully explained to him, and the proposed manner of treatment described. Being an intelligent man, he readily entered into all the precautions, and throughout observed them most conscientiously. Luckily, he did not suffer from hunger or thirst, and did not even take all the food that was allowed him. The average number of beats of his pulse a minute before being put upon treatment was 82, making 4,920 pulsations an hour, or 118,080 in a day. A few days after treatment had been begun, the pulse averaged 70, making 4,200 an hour, or 100,800 a day. Here was a difference of 17,280 pulsations a day in favor of Tufnell's treatment. That is to say, the sac was put upon the stretch 17,280 times a day less than it had been formerly. Everything progressed favorably for a while, the tumor diminishing in size about two inches in either diameter, as shown by percussion, and the murmurs becoming very faint. The patient's condition was most comfortable, he being entirely free from any pain, and neither the diet nor the almost unvarying position seemed to cause any inconvenience. The bowels were inclined to be constipated, but were gently moved by a mildly laxative pill as occasion demanded.

On the morning of June 21st the first unfavorable occurrence took place. About half past ten the patient complained of a sudden sharp pain in the chest, beginning in the right axillary region and extending across the thorax. Soon after he began to spit up small masses of clotted blood.

Physical examination of the chest revealed dullness on percussion on the right side, over a limited area lying between the nipple and the axillary line, and slightly increased vocal fremitus on palpation. On auscultation, an increased vocal resonance and broncho-vesicular breathing, with crepitant and subcrepitant râles, were heard over the same area. A pulmonary infarction in the lower portion of the middle lobe of the right lung was diagnosticated. It was not till five o'clock in the afternoon that the pulse was affected, it being then 120, the respiration being 24 to the minute, and the temperature 98° F. At three in the afternoon the pulse had been 92. The next day (June 22d), when seen in the morning, the patient's face presented an extremely pallid appearance, and at the same time wore an expression of the keenest anxiety, as if he were aware of his impending death. Examination of the chest showed no change in the physical signs. At 6 A. M. the pulse was 130, respirations 20, and the temperature 100·2°. He was ordered to keep perfectly quiet, and was given half an ounce of brandy three times a day. About seven o'clock, on the morning of the 23d, the patient was suddenly attacked with intense dyspnœa, causing him to gasp for breath, and complained of severe pain in the right side; at the same time his face was observed to grow perfectly white. Before assistance could be summoned he was dead. At half past 6 A. M. his pulse had been 120, the respirations 20, and the temperature 99·2°.

An autopsy was performed, about four hours after death, by Dr. George L. Peabody, the pathologist of the hospital, and revealed the following state of affairs: The liver extended as far down as the umbilicus. The right pleural cavity contained 2,300 cubic centimetres of blood in a freshly coagulated state. This blood was found to have come from an opening, nearly two inches long, situated in the loose cellular tissue of the posterior mediastinum, just above the diaphragm. The thoracic and abdominal organs were removed *en masse*, together with the ninth, tenth, eleventh, and twelfth dorsal and the first lumbar vertebræ, and the aorta was opened on its anterior aspect. The whole aorta was found to be very atheromatous, thickened, and stiff. Four inches above the bifurcation there was an abrupt enlargement, of about the size of a large hen's egg, containing small recent clots; and, in addition, laminæ of decolorized fibrine, which were attached to the walls of the sac. There were numerous small saccular dilatations springing from the main one. At the upper and outer aspect of the main sac was a rent, about an inch long, opening into the layers of the media, and running up between them, to connect with the opening into the right pleural cavity, described above. Just above the sac first described, the aorta became narrowed again, but almost immediately reëxpanded into a large aneurism, reaching from the first lumbar to the tenth dorsal vertebra, eroding the bodies of all of them very extensively. This sac was of about the size of a fist, and, like the other one, its walls were made uneven by numerous little pockets. It, too, had a lining about an eighth of an inch thick, consisting of numerous laminæ of decolorized fibrine. In both sacs it was noted that the fibrine was nowhere very firm, and appeared to be of moderately recent date. At the base of the right lung there was a large infarction.

The interest of this case centers chiefly in the fact of its being a demonstration that the treatment employed for the cure of the aneurism was really in a measure efficacious, and did what was claimed for it, namely, aided the deposition of fibrine. On May 31st the patient was put upon Tufnell's treatment, and on June 23d he died. In these twenty-three days a considerable amount of fibrine, amounting to a layer one eighth of an inch in thickness, in some places, was deposited pretty evenly upon the inside of the tumor. That this fibrine was not old, its appearance clearly showed, it being nowhere of that dense, almost cartilaginous consistence that is found in aneurisms of long standing, but was, on the contrary, though firm, easily cut and readily separable into the layers in which it had been deposited. Tufnell cites a number of cases which he treated successfully. In some of them, death subsequently taking place from diseases unconnected with aneurism, the old sacs were found to be completely filled. In this case, the primary cause of death was undoubtedly the dislodgment of a small piece of fibrine from the aneurismal sac, and its arrest in the lower lobe of the right lung. This caused a pulmonary infarction. The infarction in the lung, though of considerable size, might not have been sufficient to cause an increase in the number and force of the heart's beats, for the embolus was arrested at about half past 10 A. M., and it was five o'clock in the afternoon before the pulse became affected. It then ran up to 120, having been 92 at 3 P. M., and 72 at noon. But, following the infarction, came a secondary fever, and this further stimulated the heart, so that, on the morning of June 22d, the temperature being 100·2°, the heart's beats numbered 130 to the minute, or nearly double what they had been before the infarction occurred. This increased strain the sac was unable to withstand, and, after resisting for forty-four hours and a half, it finally burst.

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Proceedings of Societies.

NEW YORK OBSTETRICAL SOCIETY.

A stated meeting was held December 21, 1880, Dr. James B. Hunter, President, in the chair.

Retained Ovum.—Dr. Skene showed a flattened ovoidal mass that he had removed, on the day of the meeting, from the cervical cavity of a patient who was supposed to have miscarried at the third month on the 8th of September, and who had since suffered with moderate hæmorrhage a great portion of the time, but with no other symptoms. After removing the mass, which seemed but feebly attached, about a fluidounce of dark-colored blood escaped, evidently from the upper portion of the uterus. The mass seemed to be an ovum. It was referred to the pathologist.

Ruptured Ovarian Cyst; Ovariotomy.—The President showed a tumor of the ovary that he had removed the day before. Three weeks previously, the patient was placed upon the operating table, with everything in readiness for ovariotomy, but the tumor was found to have collapsed, and the operation was postponed. The fluid accumulated again, however, and again (on the day of the operation) the bulk of the tumor disappeared. The tumor was removed, and was found to consist of a rather thick-walled sac, with a rent about three inches long at a point where the wall was somewhat thinned, together with a semi-solid mass as large as one's fist. The fluid that had escaped into the abdomen was very thick and of the sort that was generally supposed to be highly irritating, but no signs of peritonitis had been found, and thus far the patient had done perfectly well. ═══ Dr. Jenkins asked if the subsidence of the tumor had been followed by diuresis, and stated that he had known of a case in which subsidence of the tumor took place many times (as many as fifty times in a period of fifteen years), accompanied in each instance with excessive urination. At the autopsy, the tumor was shown to have been ovarian. ═══ The President replied that diuresis had not occurred in this case. ═══ Dr. Garrigues had known an ovarian tumor to diminish in size after profuse diuresis caused by salicylic acid.

Fibro-cystic Tumor of the Uterus.—Dr. Thomas related a case of abdominal tumor, weighing probably from thirty-five to forty pounds, fluctuating throughout, and dull on percussion, which he had supposed to be an ovarian cyst, although, from the acuminated shape of the abdominal enlargement, he doubted if it were not fibro-cyst of the uterus. Ten days ago he cut down upon the tumor, and drew off about a quart of bloody serum with a trocar, thus emptying a cyst, which stood out from the anterior aspect of the growth and accounted for the acumination of the abdomen. The remainder of the tumor proved to be solid. To get it away through a small opening was the problem, for his experience had taught him that every quarter inch added to the length of the abdominal wound, in an upward direction, increased the danger to the patient. The tumor was therefore seized and dragged to the wound (enlarged to three inches in length), and piece after piece was removed until the size of the mass was reduced to about that of a cocoanut. It was then drawn through the wound. It was attached to the fundus of the uterus by a short pedicle, no thicker than a finger. This was transfixed and tied, and then divided and dropped. The tumor was still adherent to some coils of intestine, and these adhesions were gently separated with the handle of the scalpel, the effort being made to leave some of the tissue of the tumor still adherent to the intestine. The growth seemed to have no connection with the ovary or the broad ligament. At the operation, the ovaries were not felt, being bound down by old exudation. ═══ Dr. GARRIGUES felt confident, from microscopical examination of the tumor, that it was of ovarian origin, notwithstanding the relations that were found at the operation. Large fibro-cystic tumors of the ovary had not been described, but, if this were conceded to be one, it was the second one he had seen.

DIAGNOSIS OF CANCER OF THE UTERUS.—Dr. JENKINS related a case that he had lately seen in consultation, in which, having seen it but once, and under such circumstances that a thorough examination, including the use of the speculum, would have added materially to the patient's discomfort, he had founded a diagnosis of malignant disease (as against chronic inflammation) largely upon the entire absence of any history of pain. The patient was a cook, forty-one years old, who, ten days before he saw her, was exposed to cold while menstruating. In a day or two, the lymphatics of the right thigh were found to be swollen, and the physician in attendance made an examination, using a cylindrical speculum. This was followed by hæmorrhage, and the patient became feverish. On digital examination, Dr. Jenkins found the cervix enlarged, hardened, and nodular, but movable. ═══ Dr. FOSTER thought that the use of the speculum in cases of cancer, while generally unnecessary for diagnostic purposes, was not so objectionable as was usually thought, provided due care were employed, and Sims's instrument used. ═══ Dr. CHAMBERLAIN had never refrained from using the speculum in such cases. It certainly was not often required to complete a diagnosis, except in the initial stages of the disease. He knew of no mischief resulting from the speculum except hæmorrhage, and that could always be controlled. He would deprecate the idea that the speculum was to be avoided, since only by its use could local treatment be conducted efficiently. ═══ Dr. THOMAS thought that such absence of pain as Dr. Jenkins had related told materially against the idea of inflammatory disease, and that cancer of the cervix could almost invariably be made out with the finger alone. It was only the *unnecessary* use of the speculum, he thought, that authors meant to deprecate, and such a sentiment should be emphasized still more than it had been. Under ordinary circumstances, and with due care, no harm would result, but it was awkward to have to tampon the vagina and then allow the patient to go to her home, far away, perhaps, so that a physician would have to be called in to remove the tampon. He had been interested in the state of the lymphatics in Dr. Jenkins's case, for he had never met with involvement of the lymphatics of the lower limbs as the result of uterine cancer. ═══ Dr. Skene had seen a case of cancer of the uterus, in which Dr. Clarke had afterward found the lymphatic glands of one of the lower limbs affected, but by that time the disease had invaded the vagina.

Chian Turpentine in Epithelioma of the Cervix Uteri.—Dr. Polk related the case of a woman whom he saw last spring, who was suffering from continuous and rather profuse metrorrhagia, and in whom all the physical signs of epithelioma of the cervix were recognized. Chian turpentine was ordered, and she continued it through the summer—twenty-five grains a day. From May to September, there was no change of the physical features of the affected part, but the patient's general condition improved. September 15th, she entered the hospital. Up to that time the hæmorrhage had been slight, but almost continuous. Since that date, still taking the turpentine, she had lost blood only about five days in each month, and a leucorrhœa, with which she had been affected, was decreasing. Physical examination, yesterday, showed the cervix very much smoother, with but few distinct nodules, and rather rough manipulation was required to produce even slight loss of blood. ═══ Dr. Skene had seen two cases in which Chian turpentine had been used—for three months in one, and for six months in the other, without discoverable benefit. Such growths, it was well known, would sometimes come to a temporary standstill spontaneously. ═══ Dr. Chamberlain alluded to the statements made some years since by Dr. J. R. Leaming as to the value of tincture of thuja occidentalis. At the time he had satisfied himself that the tincture had power to restrain the growth of, and even gradually to remove, the vegetations which were found on the site of syphilitic sores of the vulva and vagina. This power, however, was so far inferior to that of nitric acid or the knife and scissors, that he would consider it unjustifiable to depend upon it in any case of cancer. In reading Dr. Clay's account of Chian turpentine, he had been struck by the description given of the tree which produced the drug, and had inferred a likeness between it and the thuja, or white cedar. ═══ Dr. Polk had no expectation of curing cancer with Chian turpentine, but, if it would really procure temporary mitigation of the symptoms, patients should, he thought, have the benefit of it.

Inversion of the Uterus without Ascertained Cause.—Dr. Polk mentioned a case of inversion of the uterus in an unmarried woman, thirty-five years old, with a rachitic pelvis. The uterus was somewhat enlarged, but there was no tumor of the fundus, or other recognized cause of the inversion. He had not yet succeeded in reducing it, although many methods had been tried.

Supposed Hydro-salpinx.—Dr. Skene related the case of a woman who had been under treatment by a physician, who diagnosticated a subacute inflammatory affection of the left broad ligament; in the region of which there was some thickening. The patient began to suffer from an annoying discharge from the uterus, intermittent in character, and at times very profuse. The liquid resembled a mixture of serum and mucus. Her physician brought her to Dr. Skene, who was inclined to regard the case as one of dropsy of the Fallopian tube, and advised aspiration, with the subsequent injection of irritants. This course was followed, a small quantity of the fluid being withdrawn with the aspirator, and carbolized water being injected, and afterward a solution of iodine. Some inflammatory action followed, but no benefit. There was now an elastic swelling to be felt at the left side of the cervix, as large as a fundus uteri. The diagnosis was regarded as doubtful, but he proposed to lay the swelling open by an incision, and establish free drainage.

Supposed Cystic Tumor of the Ovary.—Dr. Dawson spoke of a case of enormous distention of the abdomen that he had seen last May, at Sag Harbor, Long Island. The patient was a lady, sixty-five years old, whose abdomen had begun to enlarge three years before. She had been bedridden for three months, and was then emaciated and in a state of exhaustion that seemed to call for the relief of the abdominal distention without delay. The abdomen measured fifty-nine inches around at its largest part. The uterus was small, crowded down, but movable. The case had been regarded as one of ascites, due to renal or hepatic disease, but he was under the impression at the time that it was one of ovarian cyst, although the enormous distention precluded a satisfactory examination. With an aspirator he removed six gallons and a half of dark, chocolate-colored liquid, looking like that from an ovarian cyst, and he estimated that about a gallon was left. The woman felt immediate and marked relief, and recovered rapidly. Three months afterward, however, she wrote that her abdomen had begun to enlarge again. In August she died, after a short illness, of dysentery, and, as there was no autopsy, the exact nature of the case was uncertain.

A stated meeting was held January 4, 1881, Dr. Henry D. Nicoll, Vice-President, in the chair.

Drainage Tubes in Ovariotomy.—Dr. Harrison reported a case of ovariotomy, which had been under his charge, in which there had been extensive pelvic adhesions. The operator, Dr. T. A. Emmet, regretted not having inserted a drainage tube at the time of the operation, for, when it was afterward found desirable to introduce one, and the wound was reopened, to reach an accumulation of fluid detected from the vagina, and causing blood-poisoning, it was found impossible to make the tube enter the peritoneal cavity, owing to adhesions. The tube should always be used in such cases, and passed to the bottom of Douglas's cul-de-sac. He had never seen any harm result from it; but the drainage must necessarily be limited, from early adhesions taking place, and the idea was fallacious that liquids injected by the tube would pass freely through the peritoneal cavity—yet much good would come from removing the fluid collected in the cul-de-sac before the tissues became agglutinated. But the tube should be used only in cases with pelvic adhesions. ═══ Dr. Nicoll testified that it would often be found impossible to introduce the tube, except at the time of the operation.

The Dangers of Vaginal Injections.—Dr. Chamberlain alluded to several cases in which so much pain had followed vaginal injections of hot water that the use of them had had to be suspended. In two patients they had seemed to cause perimetritis. One of these patients was under treatment for metritis and parametritis, and the os was patulous; in the other case there was stenosis: in neither was there any reason to infer that water had entered the uterus, for there was no quick after-coming uterine colic, but rather a slowly developing pain and tenderness. In order to guard against active or passive ingestion of water, he commonly advised that the patient should take the half-sitting posture, with the perinæum at the edge of the couch or bed, and use the fountain syringe, with a nozzle closed at the end. Care not to insert the nozzle too far was also enjoined. He believed that, in the cases mentioned, the perimetritis was developed by the direct action of the heat—a thoroughly exceptional result, and yet worthy of note. ═══ Dr. Ward thought that, if there were salpingitis, a damming up of water in the uterus might light up peritonitis, perhaps by provoking contraction, and so forcing the secretions into the peritoneal cavity; but, that the injection itself was likely to gain entrance into the peritonæum, he did not believe. ═══ Dr. Mundé had met with several cases in which the injections caused such pain as to make it necessary to discontinue them, but he had never observed any inflammatory results. ═══ Dr. Foster looked upon one of Dr. Chamberlain's cases—the one in which there was stenosis—as confirmatory of the opinion, brought forward by himself some four years ago, that the evils which sometimes resulted from vaginal injections were not necessarily due to the direct entrance of the stream from the nozzle into the uterus; but that, as the sequence of a closure of the vaginal orifice by means of spasmodic action (the perineal muscles contracting firmly around the nozzle), the water accumulated in the vagina, and, the pressure increasing with every compression of the bulb, some of it might enter the uterus. Hence the reverse-current nozzle was not all that was needed to prevent danger. The nozzle that he himself used (a description of which was to be found in the "Hospital Gazette" for October 15, 1877) prevented any such imprisonment of the water. That this accumulation often took place when the ordinary nozzle was used, any one might satisfy himself by depressing the perinæum after withdrawing the instrument, when, in many cases, a quantity of water would gush out from the vagina. Furthermore, he believed this distention of the vagina might cause pain, and perhaps a fresh attack of inflammation, without any entrance of water into the uterus, simply as the result of the stretching to which the surrounding inflammatory deposits were subjected. ═══ Dr. Watts remembered several cases in which injections had caused pain, and he had known this to be overcome by having them taken in the dorsal decubitus. He had never seen inflammation result. He thought that injury was sometimes done by the direct impingement of the nozzle against inflamed parts. ═══ Dr. Mundé thought that a patulous state of the os uteri was most commonly the cause of trouble, the injection entering the uterus. He characterized Dr. Foster's views as ingenious, but not supported by facts. ═══ Dr. Chamberlain had often observed retention of water in the vagina after injections in lying-in women, so that it was necessary to depress the perinæum in order to let it out. He doubted, however, if the amount of distention that could be produced with the fountain syringe was capable of giving rise to such results as Dr. Foster had suggested.

A stated meeting was held January 18, 1881, Dr. James B. Hunter, President, in the chair.

Rupture of the Uterus.—Dr. Mundé showed the uterus and a portion of the vagina removed post mortem from a woman who died after a rupture of the parturient canal. The patient, who was attended by Dr. L. L. Bradshaw, was thirty-three years old, and was said to have been prematurely delivered of twins some years before. During the first stage of labor Dr. Bradshaw detected a marked narrowing of the conjugate. The membranes had ruptured and the head was engaging. After two hours the pains had grown very feeble and less frequent. The head was now found to have receded, a portion of the placenta protruded into the vagina, and there was slight hæmorrhage. The patient's face was somewhat anxious, and her pulse was weak. Dr. J. W. Flynn was now called in consultation, and found the child's occiput in the right iliac fossa, and its extremities very easily distinguishable on the left side, as if immediately under the skin. Chloroform was given and version and extraction were performed, the operation lasting two hours, and resulting in the birth of a dead child weighing about nine pounds and a half. The placenta came away at once. A portion of intestine now appeared in the vagina. Up to the time of delivery there were no great signs of collapse, and the woman rallied well; but in thirty-six hours she died with symptoms of peritonitis. Dr. Mundé was present at the autopsy, which was made hurriedly, and had not examined the specimen carefully. He was inclined to think that laparotomy would have been preferable to version after the rupture occurred, and, as the conjugate measured no more than two inches and a half, that craniotomy might have been indicated early in the case. ═══ Dr. Garrigues suggested that laparo-elytrotomy might properly have been considered. ═══ Dr. T. A. Emmet remarked that the specimen showed, he thought, a laceration of the cervix at the vaginal junction, but not of the body of the uterus.*

Retained Ovum.—Dr. Watts showed a fœtus expelled by a patient who had supposed herself to be six months pregnant. She last menstruated in the early part of July, 1880, and about two months afterward she jumped from a carriage to save herself in a runaway accident and struck her abdomen against a fence. As she did not "feel life" at the expected time, she consulted Dr. Watts as to whether she was pregnant or not. The uterus was found enlarged, and the cervix was somewhat soft, but no fetal movements or heart sounds were detected. About the middle of January she was seized with pain, and in a few hours the fœtus was expelled. If her account was correct, the fœtus must have been dead about four months. The specimen was referred to the pathologist.

Treatment of Asphyxia Neonatorum.—Dr. Rodenstein showed a double bellows with a double valve, made by Mr. Ford, of Messrs. Caswell, Hazard & Co., after the pattern of one that had been sent here from Freiburg, Germany, by its inventor, Dr. Dipp. It was intended for insufflation of the air-passages in cases of asphyxia neonatorum. ═══ Dr. Garrigues alluded to the danger of using too much force where instrumental insufflation was employed. ═══ Dr. Polk remarked upon the disposition of writers at the present time to avoid referring to catheterization of the trachea. He had recently seen a pointed illustration of its value in the case of a child with laryngismus stridulus that had been brought to his clinic. While examining the child, he drew the tongue forward and a typical spasm at once took place. The child immediately appeared to be dead. Various methods of resuscitation having been used in vain, a No. 8 silver catheter was passed into the trachea, and the lungs were inflated through it by intermittent compression of the thorax. The cyanotic hue of the child's face at once disappeared, even before it began to breathe, and in half an hour he was breathing well. The metallic catheter was used after failure to pass a soft one. ═══ Dr. Ward regarded faradization as the most efficient means of resuscitation in cases of asphyxia. ═══ Dr. Polk asked why, if this were true, it was not more serviceable in opium poisoning. Admitting its efficiency, moreover, faradization was not always readily available. ═══ Dr. Ward remembered a case in which it was necessary to send from the vicinity of the East River to Dr. Thomas's house in Fifth Avenue to get a battery, and yet its use proved efficient. ═══ Dr. Polk believed that whatever good was accomplished by faradization in such cases was the result of mere stimulation of the skin, for it was not easy to act upon the phrenic nerve alone. Consequently he was disposed to class the remedy with the indirect rather than with the direct means. Catheterization was a direct means. ——— Dr. Ward thought that, in the case he had referred to, the action was certainly something more than surface stimulation. ——— Dr. T. A. Emmet asked if irritation upon the posterior wall of the trachea would not of itself tend to excite respiration. In regard to artificial respiration, usually it was not kept up long enough. He referred to a case in which, after performing tracheotomy, he had continued it for five hours and more before respiration was fully established. ——— Dr. Polk remarked that, as concerned stimulation by the point of the catheter, in his case there were no respiratory movements until after the cyanosis had begun to disappear, as the result of aëration by the air that entered through the catheter. ——— Dr. Mundé had often known injury produced by too forcible insufflation. The bellows shown by Dr. Rodenstein would be quite as likely to inflate the stomach as the lungs. With faradization he had succeeded after three hours. The electrodes should be applied, one over the phrenic nerve, and the other under the diaphragm, and the shocks should not be too rapid. ——— Dr. Garrigues regarded insufflation with the catheter as one of the most efficient means of resuscitation. It was the prevailing method in Copenhagen. He had kept it up for two hours and a half before a gasp took place. The introduction of a flexible English catheter was easy, if the epiglottis were lifted up with the finger. Opium poisoning was not quite comparable with this sort of asphyxia. It was a question if faradization acted through the phrenic nerve or directly upon the diaphragm. ——— Dr. Mackenzie asked about the effect of faradization upon the heart. In a recent case of chloroform poisoning, two well-known surgeons had declined to use it, as likely to disorder the action of the heart, and not by any means certain to excite the diaphragm. ——— Dr. Polk believed that external faradization could not affect the heart. ——— Dr. Beverley Cole, of San Francisco (present by invitation), agreed in a measure with Dr. Polk as to the action of faradization as a surface stimulant. He had never had any success with insufflation, and had been surprised at what had now been said of it. What reason was there, he asked, in filling the lungs of an asphyxiated person with air that had already been robbed of its oxygen and laden with carbonic acid in one's own lungs? ——— Dr. Polk replied that the air which came first in expiration still contained considerable oxygen—enough for the purpose. ——— Dr. Foster added that air could be taken merely into the mouth, distending the cheeks, and then blown out again quite rich in oxygen, having never entered the lungs. ——— Dr. Garrigues thought this an important detail, as, by using the cheeks alone, there would be no danger of exerting too much force. ——— Dr. Rodenstein remarked that the bellows should be used with great gentleness, and with a catheter. In one instance he had succeeded with hypodermic injections of brandy after an hour's vain trial of other measures, including insufflation; but the child died in convulsions within twenty-four hours.

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* See the Pathologist's report, made at the next meeting.

Doubtful Sex.—Dr. T. A. Emmet described a person whom he had recently examined who passed as a woman, but who, although twenty-two years old, had never menstruated. In each labium, which looked like half a scrotum, there was what seemed to be a testis. The supposed clitoris was enlarged, and resembled the penis of a boy seven or eight years old, but the urethra opened below it. There was no uterus, nor was there a vagina, and no ovaries were felt. The hips were small, and the breasts were undeveloped. Sometimes there was a discharge from the urethra after erection. The bodies in the labia were not quite as large as normal testes, but they were more mobile than ovaries in the inguinal canal. The individual had a supposed sister in the same condition. The case would be reported more fully hereafter by the family physician. ═══ Dr. Mundé remarked that, in such cases on record, although the subjects were women to all appearance, the bodies in question had always been found to be testes.

Sarcoma of the Uterus.—Dr. Mundé related the case of a lady, thirty-eight years old, who sent for him on account of uterine hæmorrhage. The uterus was considerably enlarged, but she stated that she had menstruated the month before, and that she had used means to prevent pregnancy. In a few days a soft mass as large as a fig, and looking like torn placenta, was expelled. More material of the same sort came away within the few following days, and some was removed with a curette. This was examined microscopically by Dr. Heitzmann, who pronounced it the most malignant form of round-celled sarcoma. This was two years ago, and there had been no signs of recurrence nor any further hæmorrhage.

A stated meeting was held February 1, 1881, Dr. James B. Hunter, President, in the chair.

Rupture of the Uterus.—The pathologist, Dr. Garrigues, reported on the specimen presented by Dr. Mundé at the last meeting, in regard to which a difference of opinion had been expressed as to whether it showed a rupture of the uterus or of the vagina. The specimen had been removed hurriedly, and no portion of the vagina had been taken away with it; the two distinguishing characteristics, the differences of epithelium and the plicæ palmatæ, were absent, but the flap of peritonæum attached to the specimen in front showed that the subjacent tissue was uterine, and not vaginal. Careful examination showed that, besides a complete longitudinal rent of the right side of the cervix, there was an external incomplete rent of the anterior wall of the body, together with an internal incomplete circular rent at the junction of the neck with the body of the uterus. The specimen was interesting, not only because ruptures of the uterus were rare, but because they were especially rare in this country, where narrow pelves were not common, and because of the extensive ravages in this specimen. The most common rent was the longitudinal; in this instance there was a complete longitudinal rent, which, together with the anterior incomplete rent, formed a **T**-shaped rupture, which was the rarest form. There was a great difference in this specimen between the thickness of the body of the uterus and that of its neck, and this fact went to explain the occurrence and the situation of the rupture. In such cases the fœtus, unable to gain entrance into the narrowed pelvis, was "born into the cervix," so to speak, and distended this portion of the organ beyond its power of resistance.═══Dr. Hanks asked if this difference in thickness might not have been due to what he supposed was generally the effect of a longitudinal rupture of the cervix, namely, to interfere with the normal post-partum muscular contraction and involution, the circular fibers having lost what might be called their *point d'appui*, by reason of the solution of their continuity.═══Dr. Foster did not think rupture of the circular fibers of the cervix would prevent its contraction, but that the over-distention to which it had been subjected might. So far as involution was concerned, that was a different matter, being largely a metamorphosis of tissue.═══Dr. Garrigues had observed that, even in cases of normal labor, the after-contraction was principally in the body of the uterus, less in the neck.═══In illustration of the idea that contraction might take place in the cervix after rupture of its circular fibers, Dr. Foster instanced fracture of the patella, after which the quadriceps extensor femoris had nothing to pull against, but yet it pulled most vigorously. In this case of ruptured uterus the patient died thirty-six hours after delivery, and there had, therefore, been sufficient time for contraction to take place, but not for any great degree of involution.

MONSTROSITY.—The pathologist reported upon the fœtus presented by Dr. Watts at the previous meeting. It was an anencephaloid œdematous monstrosity The whole body was fifteen centimetres long; the head and neck, six centimetres; the trunk, six centimetres; and the lower extremities, three centimetres—an evident disproportion of parts. The head was enormous, collapsed, and destitute of brain, while the cranial bones were well developed, and showed an opening looking like an incision, but Dr. Watts had assured him that it had not been interfered with. The skin on the forehead, cheeks, abdomen, and extremities was redundant and œdematous. The skin about the axilla was loose, so that, when stretched, the axillary fold reached to the wrist. A similar fold extended from the groin to the tarsus. Altogether, the specimen presented a turtle-like appearance.

INJURIES AND DISEASES DURING PREGNANCY.—The President spoke of the case of a woman, thirty years old, who had sustained a compound fracture of the leg, from a railroad accident, three weeks before, at a time when she was six months advanced in her first pregnancy. The leg was amputated, and she made a good recovery, without any tendency to miscarriage. Another woman, a multipara, about forty years old, and very stout, at about the seventh month of pregnancy, had a bad fracture of the leg, from a street-car accident. The leg was amputated. In this case, also, there was not the slightest tendency to miscarriage. He would like an expression of opinion, on the part of those present, as to the liability to miscarriage after severe accidents and capital operations in advanced pregnancy. He believed there was less danger at the sixth or seventh month than two months earlier.═══Dr. HANKS mentioned the case of a patient who was seized with double pneumonia at the eighth month of pregnancy, and on the third day of the pneumonia gave birth to a living child. She finally recovered, though the pneumonia ran a very severe course. On visiting her, two weeks after having discharged her as cured (five weeks from the attack), he found she had begun to nurse the child, and in a short time she was able to give it all the milk necessary. It had occurred to him that the favorable progress of the pneumonia was promoted by the early supervention of labor, and he questioned if it would not sometimes be justifiable to induce labor under such circumstances. ═══Dr. NICOLL referred to the case of a patient who died at the New York Infant Asylum, at the end of the eighth month of pregnancy, from pneumonia of the middle and lower lobes of the right lung. As the fetal heart was beating a few minutes before death, Cæsarean section was done at once, by the resident physician, but the child was dead when it was extracted. It was a question, whether labor might not properly have been induced twenty-four hours earlier. Certainly the results could not have been worse than they were.═══The PRESIDENT said, in reference to such cases, that the fœtus might be suffering very much, though the heart were beating up to about the time of the mother's death. There was a high degree of toleration on the mother's part in such cases. Three weeks before, he had delivered a very stout woman of a child at full term. Two months previous to her delivery she had fallen down a long flight of stairs, rolling over and over several times, and striking on her head at the foot of the stairs.

She was very badly bruised, yet she did not miscarry, but went on to full term, and was delivered of a child which lived six hours.——Dr. WARD thought it would be bad practice to bring on labor during pneumonia.——Dr. REYNOLDS alluded to the theory of an excess of carbonic acid in the blood as tending to excite labor, and, since in respiratory troubles the carbonic-acid gas was not thrown off fast enough, he supposed its accumulation might tend to bring on labor.——Dr. FOSTER, having asked if Dr. Hanks's patient was delivered easily, and having received an affirmative reply, thought the action of the abdominal muscles would be materially interfered with in cases of labor during severe pulmonary diseases, that induced labor would, therefore, be tedious and powerless, and that, if this were not the case, pulmonary emphysema would be likely to result.——The PRESIDENT thought much would depend upon the stage of the pneumonia; after it was fully developed it would be very dangerous to induce labor.——Dr. HANKS thought both mother and child would have died in his case, had labor not come on.——Dr. CLARKE related a case in which he was called, on the 5th of July, to see a patient of his, an English lady of very stout build, at New Brighton, Staten Island, where she had gone to spend the summer. She expected her confinement to take place about the 1st of November. She was suffering, apparently, from acute articular rheumatism, which began in the right shoulder, then extended to the wrist, afterward to the knee, and then to the hip. He treated her with different remedies, and with varying success. Finally, the symptoms subsided in all the joints except the knee, which was swollen and excessively sensitive. About the 1st of August he went away on his summer vacation, and left her in charge of a physician on the island, but, on his return, in September, he found her in about the same condition in which he had left her some weeks before. The swelling had extended, and now reached from the groin to the toes, and the limb was as hard and white as ivory, and about twice as large as the other. So extremely sensitive was the affected limb that she had had to be etherized once during his absence, in order that her position in bed might be changed. He had her etherized again and taken home to Brooklyn, where he called Dr. Skene and Dr. Mitchell in consultation. The question of induction of labor was raised, but it was decided not to interfere. In the latter part of September Dr. Markoe was consulted with regard to making an opening in the leg, and he approved of it. The opening was made just above the knee, and, before the bone was reached, about four ounces of clear serum escaped. The periosteum was incised, but no dead bone was found. The wound healed kindly, with the exception of a sinus, which remained to this day. The night after the operation labor came on. The patient was immediately etherized, and a vaginal examination showed a narrow antero-posterior diameter, which rendered version necessary. After considerable difficulty the fœtus was extracted. The œdema of the leg immediately began to disappear after labor, and the leg was now of the natural size, but the knee was anchylosed. The lymphatics had presented no peculiar features. Was the rapid diminution in the size of the leg due to the incision, or was it due to removal of the pressure of the gravid uterus on the blood-vessels, which, perhaps, had interfered with the return circulation? and, had labor been induced some time previously, could not much of the patient's suffering have been avoided?——Dr. WARD would not induce labor in such a case, through fear of phlebitis, which might prove fatal.——Dr. CLARKE said that, should he have a similar case again, he would argue strongly in favor of inducing labor. The woman made a rapid recovery, although she took from sixty to one hundred minims of Magendie's solution of morphia every twenty-four hours during four weeks after delivery. The contraction of the pelvis was not discovered until after labor began, when the patient was under the influence of ether.——Dr. Garrigues asked if the temperature had been taken.——Dr. Clarke said it had, at different times, but no great rise had been observed.——Dr. Garrigues remarked that, if the enlargement of the limb were due simply to pressure of the gravid uterus, there would not be a rise of temperature. He had not known of a case where there was such enormous swelling of one limb from the pressure of the gravid uterus, as there was in this case, without swelling of the other limb also.——Dr. Hanks thought that, under the circumstances, Dr. Clarke would have been justified in bringing on labor. In a case of inflammatory rheumatism, in a patient of his at the sixth month of pregnancy, a very severe and obstinate attack indeed, a consultation was held, and it was decided to bring on labor. Delivery was easy, and the patient suffered little, except from the rheumatism. She continued to suffer from rheumatism three or four weeks afterward. The child was dead.——Dr. Clarke said that a point of interest in his case was the tolerance of morphine on the part of the fœtus. The patient had taken from sixty to ninety minims of Magendie's solution every day for nearly three months previous to the day on which he operated, and it was not until that morning that signs of vigorous life in the fœtus ceased.——Dr. Garrigues said that, in cases of the opium habit in pregnant women, the fœtus often remained unaffected, for the drug reached the fetal circulation only in very minute quantity. The greatest danger existed when a narcotic was administered shortly before delivery, for the new-born babe's kidneys, not being very active, were unable to throw it off.——The President remarked that that question had been raised in the society some years before, and had been discussed by several of the leading members, and there existed quite a variety of opinion among them.——Dr. Reynolds, referring to Dr. Hanks's case of double pneumonia, in which the child was not put to the breast until the second week, said it was his custom, when anything interfered for a time with the mother's nursing the child, to have it returned to her breasts after the difficulty had been removed. In a case of sore nipples, of six weeks' duration, the child was returned to the breasts after they had healed, and within a month the mother was able to give it sufficient nourishment. Cases in which infants had slept with maiden relatives of the mother while being weaned, and after the third or fourth night had succeeded in bringing milk to the breasts, went to show that one ought to persist in putting the child to the mother's breasts, even though a week or more had elapsed.

A stated meeting was held February 15, 1881, Dr. Henry D. Nicoll, Vice-President, in the chair.

Sarcomato-cystic Degeneration of the Ovaries.—Dr. Garrigues showed a specimen for Dr. Reynolds. Both ovaries had undergone cystic degeneration, the walls of the cysts being very thin and friable, and composed of spindle-shaped cells. The growth was not like an ordinary cysto-sarcoma, a tumor the larger part of which is solid; the walls in this specimen were very thin, and would break with the least handling. The tumor surrounded the uterus, and was adherent to the rectum and the omentum. In these places it was composed of round cells. The uterus was small, as would be expected in a woman seventy years old, and healthy. The rectum also was healthy, though small. The right

Fallopian tube was normal, with the exception of a slight dilatation immediately outside the uterus, and atresia of its opening into the uterus. The left Fallopian tube could be traced but a short distance from the uterus, when it became lost in the cystic mass.

Imbedded Pessary.—Dr. Foster presented a pessary which he had removed from an out-patient at the New York Hospital, a woman sixty-five years old. The instrument had been inserted by some physician two years before, for falling of the womb, and had not once been removed. It was made of watch spring, covered with india-rubber. The patient complained of pelvic pain, and there was a fetid discharge from the vagina. He found the pessary a good deal collapsed from side to side, and the greater portion of its surface imbedded in the vaginal tissues. He was unable, for want of space, to cut the upper bow behind the cervix, so as to withdraw the two lateral portions of the ellipse together; he therefore cut it on the left side as high up as possible, but below the imbedded portion, and withdrew it with a pair of forceps, with a twisting motion.

Extra-uterine Pregnancy.—Dr. Foster presented a specimen that had been sent him by Dr. James P. Hassler, of Cochranton, Pennsylvania, consisting of the fœtus, the fetal sac, and the uterus, removed post mortem from the body of a patient of Dr. Hassler's, who had died in consequence of the rupture of the sac. He also read brief notes of the case by Dr. Hassler [whose full account of the case may be found in this number of the "Journal," p. 423]. The specimen was referred to the pathologist.

Infantile Pneumonia.—Dr. Dawson presented the lungs of a child eight months old, who had died on the previous night of pneumonia. It had been nourished by a wet-nurse, and had thriven. It was seen by its mother on the afternoon of the day preceding, and she noticed that it was suffering apparently only from what the nurse termed "the sniffles." Its breathing was very little interfered with, and nothing at all serious seemed to be the matter, but in the night the nurse woke, and, upon looking at the child, which was lying by her side, she found that it was dead. Post-mortem examination showed that the lower lobe of the left lung was completely solidified, and that the upper and lower lobes of the right lung were partially solidified. The points of interest connected with the case were, that the areas of solidification were so few, so small, and so well defined, and that so little consolidation of lung tissue should cause death so quickly.——Dr. Jenkins thought that a pneumonia attended by only a small amount of consolidation of lung tissue might cause death in a short time, and he instanced the case of a distinguished physician of Boston, who died after a few hours' illness from pneumonia, and yet, after a very careful post-morten examination by able pathologists, only an area of pneumonic process of the size of one's thumb was found.

A Modification of the Vaginal Douche.—Dr. Mundé presented an ordinary vaginal irrigator, modified at the suggestion of the husband of one of his patients. It consisted in the attachment to it of a thermometer, by which the temperature of the fluid to be injected could be determined. He said it was difficult to get patients to take injections of water hot enough, to continue them long enough, and to keep the water at a uniform temperature. He thought the modification was a convenient and inexpensive means of securing attention to these points.

Cancer of the Neck of the Uterus, with Fibromatous Tumors of the Body.—Dr. Ward said that a woman came a week ago to Dr. Thomas's clinic at the College of Physicians and Surgeons, and on examining her, he, Dr. Ward, found carcinoma of the cervix and five fibromatous tumors, each one of the size of one's fist, in the body of the uterus, one on either side, in front, behind, and above. The coincidence of carcinoma of the cervix and fibromata of the body of the uterus was rare.=====Dr. Mundé thought that the occurrence of fibroma of the body and carcinoma of the cervix of the uterus in the same subject was not strange, for there was a difference between the epithelial and glandular structures of the mucous membrane of the two localities; but that the occurrence of fibroma and carcinoma, both in the cervix or both in the body of the uterus, would be very strange. When such a case was reported to the society a few years ago, doubt was expressed regarding the correctness of the microscopical examination. He did not doubt that a sarcoma and a fibroid might occur side by side, as they were but different gradations of the same disease.=====Dr. Garrigues thought that, if carcinoma and sarcoma were developed in the same tumor, carcinoma must have existed first, and, becoming more rapidly destructive, have passed into sarcoma. He remembered to have heard Dr. Heitzmann say the two diseases might exist in the same tumor.=====Dr. Mundé thought a carcinoma was more rapidly progressive than a sarcoma. The diagnosis of the latter was usually made soon after its development, and the growth was almost certain to lead to a fatal issue in a short time; the malignant character of the former was often not suspected until some time after its development, when its peculiar cachexia suggested a microscopical examination, and from that time on its progress might be rapid.=====The President thought the round-celled sarcoma was the most malignant of all growths, being most likely to recur after removal, and the most rapidly progressive.

Craniotomy.—Dr. Mundé said that he had recently been sent for to attend a case of difficult labor, and was asked to bring his instruments along, as he would probably have to perform laparotomy or some other operation. He therefore went well prepared with everything but his cranioclast, Braun's, which was at the instrument maker's for repair, but he sent a messenger for this, with instructions if it were not ready to bring a Lusk's cephalotribe. He found a woman, about four feet four inches tall, evidently a dwarf, attended by four physicians, who had tried a number of times, but in vain, to deliver her through a narrow pelvis with forceps. They had also tried to perforate the child's head with a pair of old-fashioned perforating scissors, but had not succeeded in getting the head well opened. The woman was in pretty good condition, in good spirits, had not been anæsthetized, and had been in labor for seventy hours. Dr. Mundé found, on examination, that the os was moderately dilated, though the cervix was very long, as was usual in cases of narrow pelvis, there being no retraction of the part. There was deformity of the pelvis, though he could not tell just how much, or of what nature, on account of the way in which the head was presenting. He perforated the head with the perforating trephine, but owing to the flabby condition of the tissues of the head, caused by previous attempts to perforate by others, he did not succeed in removing the usual disk of bone, but merely crushed the bones, leaving spiculæ projecting. He then applied Lusk's cephalotribe, and after fifteen or twenty minutes of hard traction, during which the instrument did not slip in the least, succeeded in extracting the child without inflicting any injury upon the mother. The child was not exactly in a putrid state, but it emitted a decidedly offensive odor. The uterus was injected with carbolized water, and the mother made an excellent recovery. The case was interesting in that he had never before used Lusk's cephalotribe, and in this instance had found it such an excellent instrument. He had always used Braun's or Scanzoni's cephalotribe, but not with good success. In one case Scanzoni's instrument slipped nine times, it being impossible to get a good hold with it on the cranial bones, and in two cases he found it necessary at last to extract the head with his hand. He thought the advantages of Lusk's cephalotribe were, that it was more nearly of the shape of obstetrical forceps than other cephalotribes; that it had thinner blades which were more deeply grooved and which, owing to their decided head-curve, closed over the base of the skull and did not slip. Other instruments did not close over the bones at the base of the skull, but pressed upon their more projecting portion, and, because of the unyielding character of the bones, the blades slipped, It was claimed that any head could be extracted by means of the cranioclast; but the cranioclast was not a compressing instrument; it was simply an extracting instrument, and, in some cases of deformity of the pelvis, the use of the cephalotribe might be indicated. But in most cases one could succeed with the cranioclast because of the power of that instrument to mold the head to the shape of the canal, and that method was unquestionably attended with less danger than extraction with the cephalotribe. ═══Dr. Garrigues spoke of a case in which he used the ordinary cephalotribe, and it slipped, but it acted very well as a compressor. He then succeeded in extracting the child with the ordinary forceps. The antero-posterior diameter of the pelvis was a little less than three inches.═══Dr. Mundé thought that, in a case in which the pelvis was very narrow, the head might first be compressed with the cephalotribe and then extracted with the cranioclast.

Fibroids of the Uterus simulating Multiple Pregnancy.—The President mentioned a case of confinement to which he was called in consultation last summer. The physician in attendance said the patient had been in labor twenty hours, but had made no progress; and that he thought the case possibly one of triplets, as he could feel what seemed like three heads. She was a colored woman, a primipara. The President found the pelvis large enough, and extracted one head with forceps, but the supposed additional heads remained. They were fibroids. He made careful bimanual examination, to make sure of the diagnosis, and found the tumors as hard as if pregnancy had not occurred. The uterus contracted well, no hæmorrhage took place, and the patient made a good recovery.

Feigned Pregnancy.—Dr. Mundé said the husband of a lady about eighteen years of age, lately married, wished him to examine his wife, who was supposed to be about six months pregnant. He called on her for that purpose, but she declined to undergo an examination. Shortly afterward, about three weeks ago, he was again called, and was told that she had had a miscarriage. He then saw her for the first time. She said she had menstruated last in June or July; that a physician, who had attended her before, told her he supposed she was pregnant; that she then took certain medicines with a view of producing miscarriage, but had not succeeded. Finally, a few hours before Dr. Mundé's arrival, she took something which in a short time caused her pain. She went to the water-closet, where she had a flooding, and then something passed from her to which a string was attached, and shortly afterward something else attached to the other end of the string. She let it pass into the sewer. Dr. Mundé made an examination three hours after the supposed miscarriage. The vagina presented no appearance of having passed a fœtus of six months; the body of the uterus was normal in size; the cervix was conical, long, and apparently virginal, being normal, except that, from the softness of the lips of the os, there appeared to have been some cervical leucorrhœa, and he learned that there had been in the spring. He concluded that her story was false, and he would now ask (not for his own information, but to satisfy the patient's husband) if it were possible for an experienced gynæcologist to be mistaken in such a matter. ═══ Dr. Ward thought such an error extremely improbable.

Mental Disturbance following the Removal of a Cervico-vaginal Sarcoma.—Dr. Harrison related a case in which he had operated for what he had supposed to be a carcinomatous infiltration of the upper and posterior wall of the vagina, and of the vaginal portion of the neck of the uterus, but in which microscopical examination afterward showed that the growth was a round-celled sarcoma. He removed it by means of Simon's scoop, and afterward, in order to get a granulating surface, applied the actual cautery. Although the patient's health had been very much depreciated by the profuse and offensive discharge and repeated hæmorrhages, she now began to recover rapidly, no febrile or other unfavorable symptoms developed for a time, and she thought she would soon be able to go out of the house; but, unexpectedly, her mind became affected, she grew suspicious of her friends and attendants, thought attempts were being made to poison her, etc., so that eventually he had her sent to the Bloomingdale Asylum. Was the operative procedure responsible for the mental disturbance?

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Reports on the Progress of Medicine.

QUARTERLY REPORT ON OBSTETRICS AND GYNÆCOLOGY.

No. V.

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8. Dr. Kilner's short article on *the effects of faradization upon parturition* will repay perusal, although it seems to have been written quite carelessly. The author uses the terms "galvanism" and "induced current" indifferently, but it is obvious that he really means the latter in every instance. He has concluded that the uterus, like the voluntary muscles, has "motor points," one on either side, midway between the umbilicus and the middle of Poupart's ligament. To these points he applies the electrodes, which should be flat and large (not less than three inches across), and secures them with a bandage. Convenient electrodes may be made by running wires in different directions through pieces of spongio-piline. For the relief of the neuralgic pain, which, the writer thinks, is often a considerable element in the pain of labor, only a very mild current is required; but for the production of uterine contractions a variable strength is necessary. When the electrodes are applied to the "motor points," the first thing observed is the immediate contraction of the abdominal muscles. Occasionally uterine contractions begin at the instant of contact, but more often a lapse of about a quarter of a minute is required, and not infrequently two or three minutes. Intermittent use, "half a minute on and the same off," rarely fails to induce contractions in a few minutes. That element in the pain which is due to uterine action is somewhat mitigated, the author thinks, by the current. To prolong any one uterine contraction, the current is best applied toward the end of the pain, "when it will commence *de novo*." The current has a tendency to equalize the pulse rate, and he has frequent-

ly seen it relieve vomiting and nausea at once. It has no effect upon after-pains.

10. Dr. Reith argues very vigorously against the supposed advantages of *the axis-traction forceps* recommended by Dr. A. R. Simpson, and his arguments apply equally to Tarnier's instrument. The article is so exceptionally free from non-essential matter as not to admit of condensation. We can, therefore, give only the author's conclusions, as follows: 1. It [the axis-traction forceps] does not effect traction in the axial direction, nor does it approximate the pelvic axis more closely than the ordinary forceps. 2. Consequently it does not avoid or diminish detrimental pressure on the pubes. 3. It is more liable, especially in particular circumstances, to inflict injury both on the mother and on the child. 4. The axis of its traction being at a slight angle to the axis of the blades, the risk of injury to the child is correspondingly increased. 5. Compression by means of the fixation-screw is liable to excess, and can not be regulated so easily or so safely as by the handles and the *tactus* of the operator. 6. The increased power gained by it is liable to be used immoderately. The fullest legitimate power can be attained by the forceps, if the shanks be of proper length. 7. Any minor advantage it may possess, such as economizing the muscular power of the operator, is counterbalanced by its general defects. 8. It is, therefore, improperly named "the axis-traction forceps," and is not entitled to supersede the forceps in common use.

11. Labat gives two cases of *external version during labor*, and implies that in faulty presentations the alternative lies between this procedure and the old-fashioned podalic version, thus ignoring the "combined external and internal version" practiced by Hicks and others. In one of the cases a temporary advantage was derived from external cephalic version, in that, the placenta having a low implantation, the head kept up pressure upon that portion of the uterus, and thus postponed the hæmorrhage to a period when, full dilatation having taken place, it became readily manageable. In this case, however, podalic version was ultimately resorted to.

13. In this short article on *expression of the placenta*, Fehling states that Credé does not teach that expression should be resorted to immediately after the birth of the child, as Dohrn and Runge seem to imagine; but that the physician should wait until three or four pains have occurred, keeping up friction over the fundus in the mean time. [This statement Fehling founds upon Credé's original paper, in the "Monatsschr. f. Geburtsk.," in 1861, and he adds that he has seen no subsequent publication of Credé's that would bear a different interpretation. In our last quarterly report we gave an abstract of an article by Credé, in the "Dtsch. med. Wochenschrift" for November 6, 1880, in which that author certainly seems to us to inculcate immediate expression.]

14. In this article Schultze reiterates and elaborates his theory of the *mechanism of the third stage of labor*, according to which the placenta, arched upon itself with its maternal surface inside, assumes this form and is then expelled by reason of the pressure of blood accumulated behind it—a theory which Dohrn had endorsed, but which Credé called in question [see our last quarterly report, in the January number of the "Journal," pp. 108 and 109]. He reproduces his original description of the process, published in 1865, and proceeds to argue that Duncan has not so effectually disproved its correctness as Credé seems to imagine. After remarking that we should not judge of the shape of the placenta *in utero* by the shape we find it to have assumed after its extrusion into the vagina, Schultze cites some remarkable observations published, in 1865, by Lemser, who, it seems, was in the habit of introducing his hand into the uterus to extract the placenta, whenever expulsive pains failed to come on within a few minutes after the child's birth. In one hundred and sixty-eight cases of natural labor he introduced his hand. In one hundred and twenty cases he found the placenta already in the os uteri. In only six cases was it not to be felt there in twenty-one seconds after the expulsion of the child. In only four cases did it fail to occupy the os uteri on the occurrence of the first after-pain. "The fœtal surface of the placenta," says Lemser, "lay most frequently behind, at the posterior end of one or the other of the oblique diameters. *The placenta was generally folded together with its uterine surface inside*, in such manner that its edges lay close together, and at that situation a cleft was to be felt, covered with the membranes. This condition was mostly present when the upper border presented (forty-eight times). It happened also that the uterine surface formed the convexity, and the fetal surface the concavity—this latter condition occurring thirteen times, in cases where the lower border presented." These facts, Schultze maintains, argue in favor of the greater frequency of the mechanism that he has described, as compared with the edgewise expulsion of the placenta, which Duncan asserts to be the only natural method. Allowing that the latter may be the more desirable of the two, it does not follow that it alone is natural, for, were the natural made up solely of the desirable, we should have to call the pains of labor, for instance, unnatural. The amount of blood effused between the uterus and the placenta need not be large in order to give rise to this ballooning of the latter, for, while the escape of blood is going on, the uterus is contracting, thus bringing the edges of the placenta together. The loss of blood may be, therefore, in some cases the effect, rather than the cause, of this incurvation of the placenta. The mechanism described by Duncan doubtless does occur, and perhaps it is most likely to take place when the placenta is thick and firm to its very edge. While thus maintaining that the mechanism described by himself is the most common, and therefore the most natural, in cases that are allowed to follow their own course without interference from first to last, Schultze candidly admits that in all probability the Dublin method of treatment very frequently accomplishes its object, that of maintaining the original contact between the placenta and the uterine wall during the process of separation—for, of one hundred cases observed by Salin, of Stockholm, in all of which this method was employed, in eighty-three the border of the placenta presented at the os internum (the lower border eighty-two times, and the upper border once), in thirteen a point from two to three centimetres distant from the border presented, and in four the central portion of the organ presented. In the majority of these cases the placenta was folded together with its fetal surface inside. As to the Credé method of expressing the placenta, it is really made up of two separate acts—that of stimulating uterine contraction by compression, and that of forcing the placenta through the vagina by pressing the uterus down into the pelvis. The first of these acts does not derange the natural process of separation and favor the retention of portions of membrane, as suggested by Dohrn, but simply hastens it. Neither has it any other disadvantage, if properly and not too hastily carried out, but, on the contrary, every advantage, preventing unnecessary loss of blood and favoring that permanent contraction of the uterus which forms the best safeguard against such puerperal morbid processes as may be due to an excessive uterine thrombosis. As to the second act, that of pressing the uterus down upon the placenta, already in the vagina, and thus causing it to emerge from that canal, although pregnancy relaxes the uterine attachments to a very great degree, allowing of extensive upward movement of the uterus, it is quite possible that a considerable downward movement of the organ may so strain the folds of Douglas as to give rise to posterior parametritis and ultimately to the derangements in the attitude of the uterus that so commonly date from a confinement. Fearing these results, the author has never made use of the second act in Credé's manipulation. He thinks it probable also that the membranes, a portion of which still remains in the uterus when the placenta is in the vagina, may very easily be torn, and a part left behind, by the traction exerted by the emerging placenta being directed at an angle to the direction in which such remnants must leave the uterus, if at all. Since we have mastered the technics of disinfection, there is no longer anything to be feared from the introduction of the hand into the vagina to remove the placenta; therefore it is better to resort to this proceeding than to risk the results above mentioned. Even the Dublin method should not be intrusted to the nurse, as both her hands are needed at the time for other purposes.

15. In Spiegelberg's contribution to the discussion, recently carried on in several of the German journals, on the *management of the third stage of labor*, he first quotes as follows from his "Lehrbuch": It is best not to cut the cord until the placenta has been expelled, at any rate not until it has escaped into the cervix and vagina. To facilitate this process, place the uterus in the median line, and in the direction of the pelvic inlet, so that any inflection is avoided (manipulating under the bedclothes and outside the patient's own clothing, in order not to chill her); if the bladder is full, it should be emptied by external pressure, or, if need be, with the catheter. The hand then grasps the uterus in such manner that its ulnar border is pressed in deep behind the organ, the hollow of the hand resting upon the fundus, and the thumb upon the anterior wall. If now a pain occurs, the anterior and posterior walls of the uterus are to be pressed together, and the whole organ should be somewhat crowded down upon the pelvic entrance, the pressure being relaxed when the spontaneous contraction subsides. If the pains are too far apart and too weak, the fundus should be rubbed and kneaded with the flat hand until a contraction takes place, and then the compression already described is to be repeated. After executing this procedure a few times, we shall find that the body of the uterus has become flattened, showing that the placenta has been expelled from it. If we now press the whole organ forcibly downward in the axis of the pelvic entrance, we may drive the placenta into and out from the vagina (expressio placentæ), and this result will be favored materially if the woman bears down and has her hips raised. This expression from the vagina is not necessary, however; it is often very painful, and therefore occasionally impossible. Consequently, as soon as the placenta has escaped from the uterus, it is best to make traction on it by the cord, assisting at the same time by pressure upon the uterus; the traction must be directed backward and downward, and not upward, until the placenta is emerging. If it does not come away readily, pass two fingers along the cord up to its insertion, or thereabouts, and with them press the placenta into the hollow of the sacrum, while the other hand drags upon the funis in the proper direction. It is not well to seize the presenting lobe of the placenta and pull directly upon it, for it is liable to tear. The passage of the placenta through the vulva should always take place slowly, in order that the membranes, situated behind it and often still partly within the uterus, may not be torn; to guard against this occurrence, turn the placenta over a few times as it emerges, thus twisting the membranes into a rope, by which means the last remnants may be withdrawn. The placenta should be carefully inspected after its removal, to make sure that everything belonging to it has actually come away. This way of managing the third stage of labor is not quite the same as the so-called Credé method. While, in the latter, it is not until the child is completely expelled that the hand is laid upon the uterus, and the organ is stimulated to contraction by friction, etc., i. e., by irritation, and the placenta then pressed out from the uterine cavity in the manner described—so that the method consists essentially in expression of the placenta, Spiegelberg, following the example of the Dublin school, attaches the chief importance to *speedy*, regular, and consequently uniform contraction of the uterus, for it is this that accomplishes the separation of the placenta, which, and not the expression, is the great point. By a constant supervision of the uterus during the whole of the time in which it is somewhat suddenly emptied (i. e., from the moment the head emerges), by following it down and thereby stimulating it mechanically, he renders the contraction of its wall, which necessarily takes place on the sudden evacuation of its cavity, not only energetic, but also uniform, thus procuring the speedy separation of the placenta, and, by continued watchfulness, avoiding any subsequent irregular contraction. The anomalous contractions which may take place unobserved, between the birth of the child and the beginning of the manipulation, in Credé's method, are impossible with the one here described. After this quotation [of which we have given the greater portion, because, although containing nothing novel, it embodies the teachings of an author whose work is probably not within the reach of most of our readers], Spiegelberg meets Schultze's objection to the Dublin method, that the nurse needs to be otherwise employed at the moment of the birth, by suggesting that the hand of a bystander may be made use of up to the time of the child's expulsion, after which the child generally needs no assistance for the short time that a skilled hand is demanded over the fundus. The manual withdrawal of the placenta from the vagina involves no danger of infection, provided the hand is carbolized and the vagina is afterward washed out with a carbolized solution.

17. Dr. Willett relates a case in which he performed *laparotomy for rupture of the uterus* sixteen years ago. The patient was an Italian lady, twenty-seven years old, in her fourth confinement. She had thrice before been delivered of a dead child—twice with the forceps and once by version. On the occasion of her fourth labor, the attending physician anticipated difficulty in the delivery, and accordingly asked Dr. Willett to see her with him. On visiting her, five hours or more after the onset of well-marked labor pains, they found her vomiting and somewhat restless and disturbed in mind, but the bystanders did not remember that she had suffered any particularly agonizing pain. There was blood in the vagina, the head had receded, labor pains had ceased, the surface of the abdomen was irregular, and through its wall an elbow could distinctly be felt. About two hours and a half after the rupture occurred laparotomy was performed, the incision extending from within an inch of the pubes up to a point above the umbilicus. Both the child and the placenta were found to have been expelled into the cavity of the abdomen, and the uterus had contracted sufficiently to prevent exhausting hæmorrhage. After removing the child and the placenta, the peritoneal cavity was carefully sponged out, and the wound was closed with sutures and adhesive plaster. A bandage was then adjusted, and cold applications were ordered. There appears to have been very little shock at any time, and the patient's convalescence was not marked by any specially noteworthy circumstance.

25. Dr. Corson states that for nearly thirty years past he has invariably treated *inflammation of the breast* with cold applications, preferably ice in a bladder "with just enough water to float it." He thinks that this treatment is sure to prevent suppuration, if used before that process has already begun, and to limit its extent, even if not resorted to until after pus has actually formed. It never fails to give decided relief from pain.

27. For the *prevention of ophthalmia neonatorum*, Olshausen recommends the use of a two-per-cent. solution of carbolic acid. Immediately after the child's birth, or even before the expulsion of the trunk, the eyelids are bathed with this solution. before they have yet been opened; and at the first opportunity the conjunctival sac is washed out with the same solution. By this means he has reduced the proportion of cases occurring at his clinic from twelve in every hundred children born alive to between three and four; and, even when the affection occurs, it is much oftener limited to one eye than was the case before. This method of treatment was suggested to him by his colleague, Dr. A. Graefe.

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3. The substance of Dr. Skene's paper will be found in the March number of the "Journal," p. 369.

4, 5. M. Bourneville relates a striking example of the effects of *compression of the ovary in hysteria.* A married woman, twenty-two years old, had been subject to hysterical attacks for several years, and of late they had occurred daily. After one of them, on the 26th of December, a paralysis of motion took place in the limbs of the right side, preceded probably by paralysis of motion in the same parts. Renewed attacks occurred on the night of the 30th to the 31st, followed by contracture of the lower jaw, the tongue remaining free. M. Bourneville saw her on the 31st, and found right hemianæsthesia and hemiplegia, with stiffness of the joints; ovarian hyperæsthesia on each side; and contracture of the jaw. On making pressure over the ovary for a few minutes, the jaw fell and the patient put out her tongue, but on suspending the compression the contracture reappeared. After a short interval, pressure was renewed upon the right ovarian region. As at first, the contracture gave way and the patient could raise her arm. On suspending the compression again, on account of fatigue, the contracture was not reproduced; sensation returned in the face (in both skin and mucous membrane), the elbow, the arm, and the right side of the trunk; and the patient could raise the arm and flex the leg. Compression was resorted to again, and soon the paralysis wholly disappeared. The patient was made to rise, and she walked without difficulty. ═══ M. Comby gives the case of an hysterical girl, eighteen years old, whose left ovary was very sensitive to pressure, which pressure would either provoke an attack or, if one had come on spontaneously, cut it short. During a severe paroxysm this compression was practiced, with great moderation, with the hand. The outbreak yielded, but some tenderness of the abdomen was left, and the next day general peritonitis was evident, which proved fatal on the third day after the compression was employed. At the autopsy, pus was found in the peritoneal cavity, thickest and most abundant in the true pelvis, where recent and very vascular false membranes were found uniting the uterus to the bladder. The ovaries and the tubes, as well as the upper part of the uterus, were also found covered with vascular false membranes, especially marked upon the left ovary. The author asks if the compression was the cause of the peritonitis. [It seems likely that a chronic perioöphoritis existed before the compression was resorted to, for this affection is insidious and far from uncommon. The case teaches, at all events, that compression of the ovary should not be employed until positive disease in its neighborhood has been excluded.]

11, 12, 13. M. Pajot maintains that *uterine stenosis* is never the sole cause of dysmenorrhœa. It may, however, contribute to the result, and when it is found in a case of dysmenorrhœa it demands treatment. Both the external and the internal os should be enlarged, not by a cutting operation or by the use of tents (for these measures may give rise to serious consequences, even death), but by gradual dilatation. For sterility, only the os externum need be dilated, and transverse is more effective than circular dilatation. ═══ In this clinical lecture Dr. Barnes gives his well-known views on the importance of uterine stenosis as a cause of dysmenorrhœa and sterility, maintaining that the os externum (and generally it alone) should be very moderately enlarged by incision. In his experience the operation seldom fails, although the first two or three periods may be passed without much relief. He does not find it necessary to resort to dilators afterward. ═══ Dr. Herman relates a case that tells pointedly against the stenosis theory of dysmenorrhœa and sterility. A young unmarried woman had suffered from severe dysmenorrhœa for seven years. The uterus was sharply retroflexed. Vaginal pessaries having failed to correct the distortion, an intra-uterine stem was inserted, and the patient was examined several times at intervals, in order to make sure that the stem kept its position. The next menstruation, with the stem *in situ*, was accompanied with more pain than usual. The instrument was removed, and a ring pessary was inserted, but it did not correct the flexion. This was in June. The July menstruation was scarcely at all painful, and the patient left the hospital. In November she reported that she had thought herself perfectly well until the 13th, when she lifted something heavy, and fancied the effort had done her some harm; but she could describe no definite symptoms. She was still wearing the ring, but the uterus was no longer retroflexed. In a few days the ring was removed. On December 14th she complained that her old pains were returning. The uterus was still straight and in the axis of the pelvic brim, although she had been for a fortnight without any pessary. After her old symptoms had persisted for several weeks, the uterus again became retroflexed. In April, the flexion being presumed to be still present (nothing further having been done to correct it), she became pregnant. To recapitulate [condensing Dr. Herman's remarks]: 1. The stem, which kept the uterus quite straight, did not relieve the symptoms. 2. The symptoms disappeared while the flexion was still present. 3. The symptoms returned, although the flexion was absent. 4. Although the uterus was retroflexed, the patient became pregnant.

14. Dr. Oliver gives brief notes of three cases of *dysmenorrhœa treated with codeine*, in quarter-grain doses, in all of which it proved successful.

18. *The uterine curette* generally employed by Dr. Palmer is the sharp instrument. In the discussion which followed the reading of his paper, Dr. Reamy expressed himself as decidedly opposed to the use of the sharp curette, except in the cervical cavity, and he entered a well-timed protest against the practice of using any curette at all, except at the patient's own house. Under all circumstances, the patient should remain quiet in bed for a day or two after the curetting. The operation might be done with impunity in many instances without this precaution, but no man could foresee in what case danger would arise, and it was the practitioner's duty to seek always the greatest safety for his patient.

20. Dr. O'Connell, in his paper on *the curability of uterine displacement*, deprecates the "sweeping condemnation of pessaries" that some eminent teachers have enunciated, and relates several cases of his own in which a cure was attained by means of pessaries.

24. Dr. Swayne criticises an abstract of a paper on *lacerations of the cervix uteri*, read at the last meeting of the British Medical Association by Dr. Pallen, of New York. Dr. Pallen's remarks bore in great part upon midwifery practice, and he took occasion to attribute pelvic disease in women very largely to what he characterized as "miserable obstetrics." Of about nine hundred patients treated in the gynæcological class of the University Medical College, of New York, says Dr. Pallen [as quoted by Dr. Swayne], more than two hundred had laceration of the cervix which either interfered with the generative functions or produced more or less disease. Dr. Swayne finds nothing of the sort in his own experience, and hence he naturally infers that the affection is more common in America than in Great Britain, and regards this frequency as in part a necessary consequence of the "miserable obstetrics" alluded to by Dr. Pallen. He emphatically denies the necessity of sewing up every laceration of the cervix. When slight, as they generally are, these lacerations produce no very definite symptoms and give rise to no particular inconveniences. By these slight tears nature overcomes the resistance of a rigid os uteri, and we sometimes imitate this natural method artificially by making incisions. If this view is correct, he asks, why should we take so much pains to restore the integrity of a circle which has offered and may again offer so great a resistance? The most ordinary results from neglected lacerations are subinvolution of the whole organ and hyperplasia of the cervix, together with one or more indolent and irritable sores of the orifice. He has always found these conditions yield, after several weeks of treatment, to rest, gentle aperients, alteratives and tonics, vaginal injections of cold water daily, occasional scarifications, and the application of caustics at first, and the sulphate-of-zinc sticks afterward, about once a week. He has never had occasion to pare the edges and bring them together with sutures. [In our opinion, there is a great measure of truth in Dr. Swayne's views, but we think they are carried too far. Those who have seen the prompt restoration of health that is often brought about by Emmet's operation, after the failure of other measures, will scarcely concede that it is only rarely called for. Nevertheless, we think that Dr. Swayne has criticised an overdrawn picture. It is true that just at the present time lacerations of the cervix occupy the foreground of minor gynæcology in this country; they are searched for with the utmost pertinacity, and we can scarcely doubt that Dr. Pallen found them in two ninths of his cases. As to how far these lacerations are causative of the results mentioned by Dr. Pallen, however, is the real question, and it is quite possible that a study of this question would not bring more "miserable obstetrics" to light in this country, with all its "unqualified practitioners," than elsewhere.]

30. M. Labbé regards *drainage by the abdominal wound in ovariotomy* as in every way preferable to drainage by the vagina, unless the tumor is removed by way of the vagina. He alludes to the lack of definite indications laid down by authors as to when drainage should be resorted to, and when it may be omitted, and gives his own conclusions upon this point, as follows: drainage should be employed (1) whenever there is, besides the ovarian cyst, an ascites that seems likely to be reproduced; (2) whenever there are such extensive adhesions that their rupture will necessarily give rise to an abundant subsequent sero-sanguinolent discharge. He speaks highly of a method of multiple drainage that he has seen employed by Salzer, of Vienna, whose success he has witnessed in cases apparently the most desperate. Instead of one tube leading into the pelvis, Salzer inserts several, one at the level of each point where the adhesions were the most difficult to break down. These tubes emerge through different portions of the abdominal wound. Large rubber tubes, about eight millimetres in diameter, should be used. They should be so thick in the wall as not to be easily occluded by compression, and before being used they should be soaked for a long time in a one-to-twenty solution of carbolic acid.

31, 32, 33, 34. In these contributions *Listerian ovariotomy* is subjected to a continuation of the discussion that has been going on for some months past in London. Mr. Bantock gives a strong argument against the theory of Listerism, and fortifies his position with an array of cases in which there was a singular freedom from septicæmia. He claims that the improvement now reached in the results of ovariotomy is largely due to the use of the ligature, the superiority of which over the clamp he has maintained throughout, in the face of the adverse teaching of Mr. Wells.

QUARTERLY REPORT ON OPHTHALMOLOGY AND OTOLOGY.

No. V.

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1. Reich's observations upon what he calls *a neurosis of the nervous visual apparatus* were made upon a large number of men who had been exposed for some days to the blinding glare from great masses of snow. In all there were blepharospasm, photophobia, and profuse lachrymation, denoting abnormal changes in the nervous visual apparatus which ended in great pain. Irritation of the optic nerves, he conceives, may be so intense as to occasion actual pain, at the same time that there are ciliary neuralgia and other vaso-motor symptoms.

2. Charpentier's paper on *the light sense and the color sense* is an interesting one. He starts out with the statement that the retina does not perceive white and colors in the same manner. This can readily be shown by Landolt's perimeter in examining the visual field. The limits of the visual-field are much more extended for white objects than for colored objects. Charpentier distinguishes these two senses by the terms *luminous sensibility* and *chromatic sensibility*. Every colored light, however simple, begins by producing a purely luminous impression, and it is only by a more considerable intensity that the chromatic impression is produced. Thus any light, monochromatic or other, is capable of producing upon the eye two distinct impressions: for a feeble intensity, a sensation purely luminous, white or, rather, colorless, the same for all kinds of light; for a more considerable intensity, a sensation of color, at first vague, then more defined, and special for each kind of light. The interval between the luminous sensation and the chromatic sensation is but slightly marked and difficult to determine, except by a very delicate apparatus, when the macula is interrogated but the interval is much more marked at the periphery.

4. In his observations on *color blindness*, Pflüger thinks he has thrown some light upon the relative value of the different methods for testing for color blindness, but he has not been led to a positive conclusion in regard to the correctness of the one or the other theory of color perception. He thinks that the theory of Young and Helmholtz has become capable of explaining many phenomena hitherto inexplicable. To this end, however, we must accept a large number of alterations in the functional activity of the individual color-perceiving elements in one and the same place of the retinæ of different persons, and in various parts of the retina of the same person, and a great variation in the reaction of these elements to light of different wave lengths. The most significant fact against the theory is that the divisions of color blindness into red, green, and violet blindness can not consistently be carried out. Many phenomena are more easily explained by Hering's theory as modified by Mauthner.

5. Von Hippel reports a case of *monocular, congenital red-green blindness*, with normal color sense in the other eye, in a boy of seventeen years. He employed in testing him the spectroscope, Radde's colored plates, Holmgren's worsteds, Stilling's pseudo-isochromatic plates, colored shadows, Woinow's disks, and Dor's plates for the quantitative determination of the color sense; and all gave the same result. He regarded the case as congenital, because the character of the color defect was the same as in the binocular congenital defect, and also because there were absolutely no symptoms of any disease in the right eye which might cause an alteration of the color perception.

14. Von Hasner's article on *color aversion, or chromatophobia*, opens a new chapter in ophthalmological literature. He regards this disease as a symptom of increased irritability of the light-perceiving apparatus, and as a species of retinal photophobia. There is generally an increased irritability and an aversion to certain colors, which may eventually lead to reflex symptoms. The aversion to glistening surfaces is met with in every form of photophobia, even to mere white surfaces, and may be regarded as the most frequent form of color aversion. But *white aversion* occurs alone, as distinct from the aversion to glistening objects, and Von Hasner cites a case. *Aversion to red*, or *erythrophobia*, was exemplified in the case of a military man, sixty years old, in whom it had come on after middle life. Looking at red surfaces occasioned him headache and vertigo, and he wore blue glasses continuously to avoid the annoyance of accidentally looking at red objects. Von Hasner cites a case of *aversion to blue*, or *cyanophobia*, in a woman, fifty years old, in whom it had existed since childhood. Looking at blue objects always brought on headache, vertigo, nausea, and even vomiting. The color sense in all these patients was normal, and there was no ophthalmoscopic evidence of any lesion.

16. Weiss describes *a new ophthalmoscopic symptom in myopic eyes*, in the form of a curved white streak or line, situated at a varying distance in front of the plane of the retina, and veiling the retinal vessels in both the upright and the inverted image. This streak seems to surround the inner margin of the papilla, and the ends are somewhat removed from the border of the papilla. In some cases only a portion of the streak is clearly visible, and in a few cases Weiss has seen two such streaks running parallel with one another. The greater the degree of myopia, the farther appears the streak from the margin of the papilla, and the farther in front of the retinal plane does it seem to lie. Weiss concludes that the curved streak is a very common feature in myopic eyes, and that it is not found in adult emmetropic and hypermetropic eyes. In young emmetropes and hypermetropes it is sometimes found, and here betokens a tendency to the development of hypermetropia; and in these same eyes other signs of incipient stretching in the posterior segment of the eyeball are also visible. Weiss thinks that it is connected with the changes which the vitreous and its central canal undergo in myopic eyes, under the form of detachment of the vitreous. Under these circumstances this appearance would be due to a very early collection of fluid in front of the papilla, and is referred by Weiss to a particular spot in the altered wall of the central canal. It is possible that this change consists in the membrane which lines the central canal being torn away from its attachment to the hyaloid membrane, and becoming folded. The appearance of the streak on the inner side of the papilla only is explained by the wall of the central canal at the funnel-shaped dilatation having a different inclination on this side from what it has on the outer side.

17. Thompson's article on *the optical illusions of motion* is very interesting. His attention was attracted to the subject by some accidental motion given to a set of concentric circles in black and white, such as are sometimes used for testing astigmatism. This shaking produced an apparent motion of rotation, in which all the circles appeared to rotate with the same angular velocity as that imparted. He then went through a series of tests, ending with a test by a series of spirals in white and black. The paper is too technical to abstract in full, but, as a result of his experiments, Thompson was led to offer the following explanation of these illusions, embodying the theory of them in an empirical law based upon the physical fact of retinal fatigue and on the psychological fact of association of contrasts: *The retina ceases to perceive as a motion a steady succession of images that pass over a particular region for a sufficient time to induce fatigue; and, on a portion of the retina so affected, the image of a body not in motion appears by contrast to be moving in a complementary direction.* This law is precisely similar to that of the complementary subjective colors seen after fatiguing the retina by the image of a colored body. To this law Thompson gives the name of the law of subjective complementary motion.

26. In *paralysis of the abducens nerve in injuries of the skull*, Panas believes that the sixth nerve is the most exposed of all the motor nerves of the eye to be ruptured in consequence of fractures at the base of the skull; and that the most dangerous point is where the nerve bends over the summit of the petrous bone before taking an horizontal course. At this point nothing separates the nerve trunk from the crest of the petrous bone. Placed between the periosteum and the superior petrosal sinus, the nerve can scarcely escape injury in fractures of this portion of the petrous bone. Now, the seat of preference of fractures at the base of the skull lies in what is called the middle region, comprised between the two petrous bones and the sella turcica, with the cavernous sinus on each side. All the conditions for facilitating contusion or rupture of the nerve trunk are found united at this point: density and fragility of the underlying bone and fixedness of the nerve covered by a resisting and inextensible membrane, the dura mater.

28. In a paper upon *the amblyopia of squinting eyes*, Javal states that the amblyopia of divergent squint resists all amelioration by exercise. When, however, the squint is due simply to insufficiency of the interni, optical treatment gives excellent results. If glasses do not give binocular vision, then stereoscopic exercises must be undertaken. The amblyopia of convergent squint is incurable when there is fixation by a peripherical part of the retina. When the fixation is uncertain, isolated exercises may produce considerable amelioration. When the amblyopia is slight, it is certain that the squint has lasted a long while. Here Javal prefers to close the good eye for a certain time, followed by the temporary use of glasses correcting the total hypermetropia, which sometimes gives brilliant results.

29. Leber has investigated *the effects of sausage poisoning upon the accommodation of the eye.* He speaks of the simultaneous occurrence of paralysis of the pupil and of the muscle of accommodation with paralysis of certain secretory nerves, especially of those presiding over salivation, perspiration, and lachrymation. The resemblance of the sausage poisoning to atropine poisoning in these cases was very marked. The toxic material must be an organic poison acting like atropine, which is developed in the tainted animal matters by a peculiar process of decomposition. He thinks his investigations have demonstrated that the centers for contraction of the pupil and for the accommodation are separated from each other, though they may be near each other; and that it is possible that, in an invasion of the central organs of the nervous system by a development of micrococci, only one of the centers may be attacked, while the other remains intact.

30. Ulrich's paper upon *the nutrition of the eye* is very long and difficult to abstract. In his studies upon the nutrition of the sclera, choroid, and retina he employed the method of subcutaneous injection. In his opinion, the vitreous is nourished directly or indirectly from the retina. He has found by his injections that, in rabbits at least, the current of fluid from the vitreous finds its way from the posterior to the anterior chamber through the root or periphery of the iris and the neighboring portion of the ciliary processes, that is, between the equator of the lens and the ciliary processes, instead of between the anterior surface of the lens and the posterior surface of the iris, as has hitherto been supposed. This filtration through the iris diaphragm maintains an equilibrium of tension in the anterior and posterior sections of the eye, which remains unchanged so long as a definite relation exists between the filtration power of the iris and the rapidity of the current. As soon as this capacity for filtration becomes absolutely or relatively too small, the tension in the posterior segment of the globe will rise, and the lens and iris will advance. A portion of the aqueous humor is derived from the vitreous humor, and consequently from the vessels of the choroid and retina. Both ciliary processes and iris take part in the secretion of the aqueous, but the latter only to a moderate degree. The cornea is nourished mainly from the aqueous humor, but chiefly its deeper strata. The superficial layers belong more to the zone of nutrition supplied by the marginal vascular network. Ulrich concludes his paper with some considerations on glaucoma and the manner in which this morbid condition interferes with the process of filtration, and the connection existing between the two.

31. Deutschmann has undertaken some experiments upon animals and man to determine *the actual source of the aqueous humor.* He claims that it can be proven experimentally with absolute certainty that, after removal of the iris and ciliary processes from the eye of a living animal, no more aqueous humor is secreted. He removes the iris through a hole in the cornea, the great dangers in the operation being copious hæmorrhage into the anterior chamber, luxation of the lens, and prolapse of the vitreous or lens, or both, through the corneal wound. He describes the different steps in the changes that take place, and the ultimate result to the eye. He then goes on to describe the method of removing the ciliary processes, the immediate effect upon the tension of the eye, and the changes that take place as a result of this. Then the eyes were enucleated and submitted to a microscopical examination. In most of these cases there was no reëstablishment of the anterior chamber, the eyeball became atrophied, all the contents of the globe underwent atrophic degeneration in time, except the lens, which became opaque, swollen, and eventually filled the entire cavity of the atrophied ball. The paper is an interesting contribution to pathology.

34. Barabascheff reports the examination of a case of *intra-ocular and extra-ocular endothelioma,* in which the new-formed tissue was the same in the tumor on the sclera and in that of the optic nerve, being composed in both places of the same elements and having the same structure. Similar formations were also found in the retina. The elements were flat cells, having the character of endothelium, but in different stages of development in different localities. Three months after the operation the whole orbit was found filled with the neoplasm. The conjunctiva was inflamed and pushed forward between the lids, which were greatly swollen and of a blue-red color. The patient died a few weeks later with cerebral symptoms.

35. According to Hirschberg, the ordinary *glioma or medullary tumor of the retina* begins as a proliferation of the inner granule layer, and grows outward with convex protuberances toward the choroid (glioma retinæ exophytum). In rare cases the proliferation begins in the most internal layers of the retina and grows toward the vitreous (glioma retinæ endophytum).

37. Poncet describes the following *deep lesions of the eye resulting from optico-ciliary neurotomy* · 1. Transient obstruction to the circulation, lasting but a short time, owing to the anterior anastomoses, but causing a perivascular migration of the white blood globules. 2. From the eighth to the thirtieth day inflammation of the divided vessels, propagated to the retina, choroid, and optic nerve — papillitis, periarteritis, endarteritis. Slight fibrous organization of leucocytes in the vitreous near the papilla. 3. In about eighteen months absolute sclerosis of the retina, with pigmentary deposit, either from hæmorrhages or from the choroid. These phenomena were observed upon animals and often led to atrophy of the eyeball. Besides these chronic disorders, immediate inflammatory lesions are produced near the posterior pole, which are shown in the rapid degeneration of the retina and choroid in this region. These lesions are due to a division of the arteries too close to the eye.

38. Hirschberg's remarks upon *optico-ciliary neurotomy* are very just. The division of all the ciliary nerves with the optic nerve does not guarantee success or protection, for there are two or three direct ciliary nerves which penetrate the anterior portion of the sclera beneath the recti muscles, one of which at least may remain unsevered by the usual optico-ciliary neurotomy. He thinks that the value of the operation has been overestimated.

42. Landolt's *new method of blepharoplasty* is as follows: He considers the lids as formed of two leaves or laminæ: an external leaf, comprising skin and orbicular muscle with the cilia, and an internal leaf comprising the submuscular connective tissue, tarsus, and conjunctiva. In cases of loss of the lower lid it is generally merely the external leaf that is lost, while the conjunctiva is usually preserved. In such a case the conjunctiva of the lower lid is freshened, and detached as far as possible from the subjacent tissue, as far as the cul-de-sac. The upper lid is then divided into its external and internal leaves, and the conjunctiva of the lower lid is inserted between them, and carefully united by sutures passing from within outward through the external leaf of the upper lid. The latter may easily be extended and elongated, and thus there is a solid occlusion of the eyeball. At the end of several months the upper lid has regained its suppleness, and the interpalpebral aperture may be reëstablished through the upper lid. Of course there will be no cilia in the new-formed upper lid. This method has succeeded with Landolt in every case where it has been tried.

49. Leber's case of *hæmorrhagic lymphangiectasia of the conjunctiva* is very interesting. The patient was a woman, twenty-eight years old, who from childhood had been subject to conjunctival hæmorrhages, the cause of which was unknown. The enlarged vessels filled with blood were evidently lymphatics, for they lay deeper than the blood-vessels and were much smaller in size, and in their anastomotic meshwork, especially near the corneal margin, the production of this condition was due to the frequent hæmorrhages into the conjunctiva, by which the lymphatics were kept constantly distended, and finally remained in a state of abnormal distention.

50. Baumgarten has been studying *the histological appearances of lupus and tubercle in the conjunctiva*, with special reference to their resemblances and differences, and has come to the following conclusion: Lupus, as well as tubercle, is a granulation tumor. The histological substratum of all these granulation growths is distinguished by an abundant development of formative cells and giant cells. While these giant cells occur but rarely in lepra and syphilis, they are met with constantly in advanced tuberculous and lupoid nodules. The products of lupus are histologically much more like ordinary inflammatory neoplasms than real tubercle is. The lupus nodule is often nothing more in the early stage than a circumscribed mass of granulation tissue, and is sometimes vascular, even when it contains giant cells. It may suppurate directly and directly cicatrize. The usual stages of its metamorphosis, absorption, softening, and disintegration, are not distinguishable from the modes of involution of ordinary inflammatory infiltration. On the contrary, real tubercle is destitute of vessels, never undergoes direct suppuration or cicatrization, and its metamorphosis occurs through the medium of a tissue destruction totally different from that occurring in ordinary chronic inflammatory products, i. e., by cheesy necrobiosis.

51. The case of *syphilitic tumor of the ocular conjunctiva*, here reported, occurred in the left eye of a patient who was being treated for granular conjunctivitis, with corneal ulcerations. It lay between the insertion of the tendon of the internal rectus and the border of the cornea, had a broad base, was of a a red color, and as large as a small filbert. It was surrounded by an intensely vascular zone, which included the cornea. It had attained its growth in four or five days. The date of the initial sclerosis was unknown, and the constitutional symptoms had all been slight. The usual anti-syphilitic treatment, persevered in for some weeks, caused its disappearance. [Ocaña seems to be but ill acquainted with the literature of the subject, for there are a number of cases reported of which he does not seem to have heard.]

53. In a lengthy article upon *pterygium*, Poncet defines it as a parasitic conjunctival sclerosis — which is certainly original, though the view will scarcely be generally accepted by pathologists. He is inclined to recognize two varieties: a false pterygium, which does not involve the cornea, and a true pterygium, which does involve the cornea, and tends to return. He thinks that the theory of a primitive ulcer is absolutely necessary for the début of the affection. Beneath the conjunctival growth are the parasitic vibriones which he describes as the sole cause of the slow onward march of the pterygium, which shows most clearly in the cornea, but is as invading in the conjunctiva and sclera as elsewhere. The onward progress is by what Poncet calls "microbiotic ulceration." Singularly enough, however, he states that, in cases where the pterygium has recurred after removal, few or no microbia have been found. As regards treatment, the superficial laminæ of the cornea should be removed with the pterygium, and then frequent dressings with boracic acid or weak phenic acid should be employed.

56. In every instance of *chronic pannus* Critchett begins his treatment by performing *peritomy*, since he has found that, when sufficient time has been allowed—usually from four to six months—for the resulting cicatrix to become dense, white, and atrophied, thus cutting off the vascular supply to the pannus, the cornea gradually becomes transparent, and the granulations either disappear or become more amenable to treatment. For a certain period after the performance of the operation, however, no benefit is usually observed.

57. Königstein's investigations into *the structure of Schlemm's canal* were carried on upon the eyes of birds, quadrupeds, and man. In man he found that the canal was a circular, irregular channel or groove, with overhanging edges, filled with connective-tissue fibers which form a mesh-work by anastomosis, with free oval spaces between. This canal is found empty after death, and is a great vein, which can be injected through the vessels. Königstein thinks that the sphincter of the pupil indirectly separates the walls of the canal through the medium of the ligamentum pectinatum and opens it. In man the so-called Schlemm's canal is in fact a dense plexus of vessels.

60. In his researches upon *the nerves of the iris*, Fürst employed the eyes of albino rabbits, and he made use of perosmic acid and chloride of gold for the large nerve trunks, but chloride of gold only for the fine branches. Before entering the iris the ciliary nerves usually aid in the formation of a thick, circular plexus on the external surface of the ciliary body. Fürst divides the iris into three circular zones: the external, reaching from the ciliary border to the circulus arteriosus; the middle, reaching to the external margin of the sphincter; the internal, or zone of the sphincter. The middle zone has one and sometimes two circular plexuses. In forming a continuous plexus, the nerve trunks advance toward the pupil and diminish in size, with a diminution also in the number of nerves containing myeline. Very few of these latter enter the extero-posterior region of the sphincter. Fürst then describes the division of the nerves of the vessels, and gives drawings representing how the capillaries are surrounded by the nervous network. He also describes the extraordinary richness of the ciliary processes in delicate nerve filaments. He does not think it possible to determine the sensory or motor functions of these nerves, except at the point at which they divide, and by the manner in which this is done. He has never found any ganglionic cells in the iris.

61. In a paper based upon two cases of *pseudo-choloboma iridis*, Von Mittelstädt discusses the morphology and genesis of these defects. The difference between a pseudo-coloboma and a complete coloboma is one of degree, both defects being brought about by the same process, viz.: a total or partial failure in the closing of the embryonic ocular fistula. He considers pseudo-colobomata, not as the first processes in the formation of colobomata, but as the last remains of the embryonic ocular fissure which is tending toward closure.

65. Seggel, in a short paper on *irido-choroiditis gummosa*, opposes the views of Schmidt-Rimpler, who distinguishes two forms of iritis, the plastic and the gummous, according to the stages of the syphilis. Neither does he agree with Wecker's view, that iritis gummosa occurs in the transitional period between the secondary and tertiary symptoms of syphilis. He thinks that syphilitic iritis occurs in a much smaller percentage of cases of syphilis than has generally been supposed, but his numbers are not large enough to prove satisfactory.

71. Manz describes two cases of *tuberculosis of the eye*, which he had observed during life, and examined after death. The first was in a boy, two years and a half old, in whom both lids of the right eye were swollen, and under the skin of the lower lid was a small movable nodule. The temporal half of the lower lid was destroyed, and the inner part was strewn with grayish-white nodules, which extended into the fornix. On the conjunctival surface of the upper lid were two small shallow ulcers, with infiltrated edges, and there were several small nodules like those in the lower lid. The destruction of the edge of the lower lid continued steadily. The child died at the end of three months, with all the signs of tubercular meningitis. Both eyes were examined, but no tubercles were found in the choroid in either. The granulation tissue, accompanying the tuberculous deposit in the conjunctiva, spread to the cornea from the limbus through the usual lymphatic channels. The tuberculous deposit seemed to be confined to the conjunctiva of the lids, fornix, and eyeball. ═══ The second case was also in a boy, eight years old, and represented chronic tuberculosis of the choroid. Three months before Manz saw him, he had had all the signs of tubercular meningitis, and for the last three weeks there had been complete blindness in both eyes. In one eye the retina was partially detached, and a tumor was distinctly perceptible beneath. Both disks were pale and atrophic. There were irregular, short nystagmic movements in the right eye. After death, when this eye was opened, the tumor had all the appearance of a sarcoma, and under the microscope presented an unusually developed stroma for a tuberculous mass. It was hemispherical, had a smooth surface, and was attached to the sclera, which was very much thickened. A second, smaller tumor was much richer in tuberculous elements, and here the choroid was abnormally thickened.

72. *Puerperal septic embolism* originates suddenly in puerperal patients. Vision is at once impaired, the vitreous becomes hazy, and the fundus oculi veiled. Total blindness may come on within a few hours after the beginning of the attack. The inflammation spreads rapidly over the whole uveal tract, with exudation into the pupillary field, hypopyon, and conjunctival chemosis. Ulceration of the cornea or rupture of the sclera finally leads to atrophy of the eyeball. It usually occurs in the second or third week after delivery, is generally double, and the prognosis is always unfavorable, as the patients commonly die from septic poisoning. As regards treatment, atropia should be instilled, and warm fomentations should be employed constantly. Sometimes the eyeball must be opened, in order to evacuate the intra-ocular abscess.

73. As a result of numerous ophthalmoscopic examinations of *the choroid in the insane*, Riva draws the following conclusion: 1. In mental alienation, especially in certain forms that have an intermittent course, or are due to some unusual cachexia, there is a depigmentation, more or less pronounced, of the choroid and of the retinal epithelium, together with a discoloration and turbidity of the retina. 2. These anomalies of the fundus are not to be regarded as physiological, for in the mentally sound they are never so pronounced nor so characteristic. 3. The coincidence of similar intra-ocular changes with special pathological conditions of the cerebrum, likely to favor active and passive hyperæmia of the choroidal vessels, forces us to admit that these circulatory disturbances, which in other parts of the body lead to sclerosis of the tissues, may also here be the more frequent cause of a similar pathological condition.

74. In a paper on *sclerotomy in glaucoma*, Landesberg comes to the conclusion that in certain cases of glaucoma sclerotomy arrests the glaucomatous process, and produces a diminution in the intra-ocular tension, and a certain improvement in the vision; but that it is no surer means of combating glaucoma than iridectomy. He thinks that sclerotomy is indicated in absolute glaucoma; in every case of glaucoma where an iridectomy has been done, and a second operation has become necessary; and in secondary glaucoma and glaucomatous conditions due to certain diseases of the eye, such as keratitis and serous iritis.

75. Laqueur contributes an interesting article upon *the prodromal stage of glaucoma*. He believes that the great majority of cases of glaucoma, occurring in persons under forty-five years of age, have a distinctly marked, long prodromal stage. He thinks that the influence of advanced years in the etiology of glaucoma has been overestimated, and that the climacteric period in women has no influence at all in its production. A very common cause of the appearance of the prodromal symptoms is intense hunger, many patients having an attack regularly if an accustomed meal is long postponed. In other patients the symptoms appear after sudden attacks of fear, fright, or anger, after sleeplessness, violent and exhausting exercise, prolonged nausea, etc.—in fact, during a state of physical or mental depression, by whatever cause induced. The well-known symptoms of colored rings or circles which are most distinct at the center of the field are also visible to the patient in eccentric vision as far as the extreme periphery of the field, though less distinctly; and an observant patient will also see a faint, colorless, diffuse ring outside of the colored ones. In this colorless ring, some patients distinctly see a stellate figure composed of innumerable radiating lines. The prodromal stage may either disappear of itself, or during sleep, or as a consequence of the instillation of physostigmin. The action of this remedy upon the prodromal stage is absolutely sure: the vision becomes perfectly clear, the tension diminishes, the cloudy and colored rings disappear. Laqueur attributes the production of the latter symptoms to the diffuse corneal opacity. Physostigmin has absolutely no influence upon the course of glaucoma; it does not cure it, but only postpones an attack. In regard to the cause of glaucoma, Laqueur thinks that we must assume that the primary disturbance depends upon some obstruction to the circulation in the posterior excretory channels of the eye; and that this must be regarded as the constant change in glaucomatous eyes, even though it has not yet been demonstrated anatomically. The obliteration of Fontana's space may possibly be the primary disturbance in those rare cases of glaucoma which begin with a deepening of the anterior chamber. The permanent curative effect of iridectomy and sclerotomy is explained by assuming that the filtration through the cicatrix compensates permanently for the obstruction in the ordinary filtration channel.

78. Denissenko claims to have found *vessels in the fovea centralis of the human retina*, where no one has ever found them before. Wherever there is a narrow molecular layer and an inner granule layer, vessels may be seen. Only in the region where the external granule layer and the bacillar layer exist alone, are there no vessels to be found. In general the vessels in the fovea centralis are numerous, and form a network with narrower meshes than in other parts of the retina. They are all capillaries. Denissenko's observations were made upon four retinæ.

82. Dianoux advises *the hypodermic use of pilocarpine in the treatment of detached retina.* He thinks the latter is more or less entirely curable by the methodical injection of the nitrate of pilocarpine, no matter what its cause may have been. Even its tardy use he regards as useful. All the cases in which he employed it were favorably affected before the tenth injection, and the effect of the pilocarpine was felt for several months (?), whatever that may mean. He regards pilocarpine as a special derivative for the eye, which is innervated by the same secretory nervous plexus as supplies the salivary, lachrymal, nasal, and sudoriparous glands of the face, all of which organs are first acted on by the pilocarpine. From this view results his method of treatment, which consists in determining a continuous current of liquid toward the neighboring regions by the injections of pilocarpine. But the experience of other men certainly stamps Dianoux as a very enthusiastic therapeutist.

83. Uhthoff's remarks upon *the pathological changes in the retina in progressive pernicious anæmia* are based upon an examination of six eyes. He found three different sets of changes: (1) hæmorrhages into the different layers of the retina, in all the cases, and in a few spots the entire retina was filled by an extravasation, with more or less destruction of tissue. In some places hæmorrhages existed with (2) varicose hypertrophy of the non-medullary nerve fibers in the nerve-fiber layer of the retina. Some nerve fibers showed small varicosities of a finely granular appearance, and without any nucleus. Most of the hæmorrhages were in the region of the posterior pole of the eye. The third change was a deposit of glistening colloid, and also finely granular masses of very varying form and size in the middle granule layer of the retina.

84. Angelucci reports four new cases of *thrombosis of the central retinal vein.* The first three cases were in persons under twenty-four years old, the fourth was in a patient of seventy-eight years. In the first three there was no recognizable cause, while in the fourth there were extensive calcification and sclerosis of the arteries and marasmus. There was no œdema of the papilla in any of the cases at any time, and hence there was no subsequent canalization of the thrombus. Hæmorrhages into the retina were few in number and small in size. In one case there was marked retinal œdema at the macula, atrophy of the papilla, and diminution in caliber of the retinal vessels. The amblyopia in these cases is instantaneous. Angelucci does not think it possible that these cases can be mistaken for apoplexy of the optic nerve, the symptoms of which are not to be certainly recognized. The prognosis is better in marasmic cases than in those due to other causes. Subcutaneous injections of strychnia are recommended, twice a week, by Michel, and Angelucci endorses their efficacy.

85. Parent gives an account of the cases hitherto published of *membranous formations in the retina*, and adds a case under his own observation. This occurred in one eye of a young woman who, owing to a sudden suppression of the menses, had lost the sight of the left eye, probably from retinal hæmorrhages. When an ophthalmoscopic examination was made, there were several greenish membranes in front of the retina, some of which extended through the entire vitreous and were clearly visible in the perfectly transparent vitreous. Parent thinks that Manz's explanation of the manner of formation of these membranes is not satisfactory. He offers as a substitute the theory that the fibrine of the blood in these hæmorrhages, being extravasated in too large an amount to be entirely absorbed, becomes organized, and is transformed into connective tissue. [These membranes are not in the retina, but in the vitreous, according to the reporter's views, and Parent seems to agree thereto.]

88. Stilling has been continuing his investigations into *the ultimate anatomical connections of the optic nerves*, and has discovered some new ones. From the optic tract diverging, a large number of fibers join the inner surface of the corpus geniculatum mediale, without, however, entering the gray substance of this ganglion. They run in a semi-spiral course under the bracchium conjunctivum posticum, and pass directly into the so-called loop. Between the lines of the latter the optic-nerve fibers can be followed as far as the lower olivary process. Besides these connections, other bundles of fibers, diverging directly from the optic tract, run upon the inner surface of the corpus geniculatum mediale, and from here a part of these fibers pass directly to the nucleus of the oculo-motorius, while others pass into the crus cerebelli. These last two connections are of special ophthalmological interest. The optic nerve is the first nerve with which a certain connection with the cerebellum can be demonstrated. Participation of this organ in the act of vision is therefore proven, and many cases of disturbance of vision, which had been attributed to affections of the cerebellum, are now thoroughly intelligible.

90. Purtscher takes up the subject of *the decussation and atrophy of the optic nerves and optic tracts.* In six cases of unilateral optic-nerve atrophy, the results all agreed with the published views of Gudden. In two cases of bilateral atrophy of the nerves, in consequence of the destruction of both eyes, both optic tracts were found in a state of gray atrophic degeneration. Gudden's system of commissures was found to contain normal nerve fibers. In a third case of bilateral atrophy of the nerves and tracts, in consequence of hydrocephalus internus, the atrophy was found to be ascending, not caused by an interruption of continuity in the optic tracts, but by changes in the ends of the optic nerves, either as a result of papillitis from increase of the intra-cranial pressure, or from dropsy of the sheath with subsequent pressure atrophy. In all these three cases, the uncrossed as well as the crossed bundles of fibers of the tracts were completely degenerated, except the small islands at the anterior border. The commissura inferior of Gudden was intact. In every case the atrophy was ascending, the optic nerve differing in this respect from all other peripheral nerves, in which an ascending atrophy is entirely unknown. The only analogue is in the sensitive roots between the spinal ganglion and the spinal cord.

91. Wadsworth's short paper upon *optic neuritis after measles* is based upon three cases. He does not regard the neuritis as the direct consequence of the disease, but rather as the result of a complicating meningitis. This complication does not seem to be a frequent one, but it is much more infrequent to see meningitis supervene after a period of apparently normal convalescence from measles. In the first case the symptoms immediately preceding the eruption were hardly enough to have excited the suspicion of serious cerebral disturbance; yet a meningitis may have existed from the first, becoming latent for a time, then bursting into activity, and again, after a second period of quiet, starting up with more violence than ever. In the second case there was no history of cerebral symptoms with the attack of measles; only after a period of uninterrupted convalescence did such symptoms show themselves. The third case is chiefly remarkable for the almost total absence of symptoms of meningitis, except those observed in the eyes. But the occurrence of paralysis of the abducens, together with double optic neuritis, makes the diagnosis almost certain.

92. Despagnet takes occasion, in citing a case of *optic-nerve atrophy following erysipelas of the face*, to dissent from Parinaud's views of the pathogenesis of these cases. He thinks that it is met with in cases where the œdema of the orbital cellular tissue is considerable enough to cause exophthalmos. The atrophy of the optic nerve in these cases occurs in the acute stage of the disease, from the sixth to the fifteenth day. It presents all the characters of simple atrophy, such as is met with in contusions or fractures of the orbit. It is always the consequence of mechanical compression of the nerve by the œdema of the cellular tissue at the bottom of the orbit.

93. Redard gives the results of his experimental researches into *the final effects of division of the ciliary and optic nerves.* When the ciliary nerves were alone divided, the circulation of the papilla was interfered with, vision was at first slightly interfered with, but blindness never resulted. The pupil remained dilated for four or five months. The sensibility of the cornea returned during the third month, at first partially. In some of the animals vision remained intact, while in a few cases there was neuritis with partial consecutive atrophy, black spots on the papilla, veins dilated and irregular. When the optic and ciliary nerves were divided at the same time, the effects at the end of three months were cloudiness of the vitreous, black hæmorrhagic spots around the atrophied papilla, patches of choroidal atrophy in spots, dilated and irregular veins, dilated pupil. The sensibility of the cornea returned in places at the end of three or four months.

95. Romiée's paper on *alcoholic amblyopia* is a somewhat voluminous one. He regards a weakening of the accommodation as the first manifestation of chronic alcoholism in the eye, and it may end in paralysis. This paresis of accommodation is sometimes the only sign of the influence of alcohol upon the eyes. As a very rare condition, complete paralysis of accommodation, with dilatation of the pupils, has been observed. The latter is much more common than contraction of the pupils. The diminution of vision to one sixth or below, occurring within a limited period of time and simultaneously in both eyes, Romiée regards as pathognomonic of alcoholic amblyopia. He recognizes the existence of color scotomata, which, however, he thinks are rarely extensive. He also recognizes three different modifications in the appearance of the papilla, the first stage being one of hyperæmia, then a characteristic whitish disk, and finally a condition of gray atrophy. The nature of the affection he regards as a diffuse interstitial sclerosis of the neuroglia of the nerve fibers, originating in the nerve centers. The prognosis is good if the patient will stop entirely his use of alcohol. Romiée gives from two to five milligrammes of the sulphate of strychnia daily, in the form of pills, and at the same time uses phosphate of zinc and sometimes electricity.

98. Ulrich's paper on *the anatomy and physiology of the region of the canal of Petit* takes up again a much-disputed subject. He considers the zonula as originating from the ciliary body and as inserted into both the equator of the lens and the vitreous body. According to him, the canal of Petit is bounded by the zonule of Zinn, the equator of the lens, and the surface of the vitreous; and its existence is proved by injecting it with air or fluid, in which condition it surrounds the equator of the lens like a worm. A more complete proof is seen in longitudinal sections of pigs' eyes, either fresh or hardened for a few days in alcohol, the sections running through ciliary body, zonula, vitreous, and capsule. The zonule is to be regarded as the tendon of the ciliary muscle; the lenticular portion of the zonule belonging to the annular fibers of the muscle, and the vitreous portion to the longitudinal fibers. Laqueur thinks that these longitudinal fibers play a second rôle as the antagonist of the intra-ocular tension. The physiological purpose of the canal of Petit is to serve as a channel of nutrition for the lens, and hence obstruction to the circulation in the canal of Petit must cause disturbance in the nutrition of the lens.

100. In the continuation of his discussion upon the subject of cataract, Galezowski comes to speak of *the influence of syphilis upon cataract operations.* He thinks that one of the most frequent causes of inflammation of the eye after a cataract operation is, incontestably, syphilis, especially if the inflammation is suppurative iritis. He gives in detail three cases from his own practice, in two of which he obtained satisfactory results by general antisyphilitic treatment. In the third case, however, the eye was lost. Galezowski shows himself a firm believer in the view of Verneuil, that constitutional syphilis, whether manifest or latent, exerts an energetic influence upon wounds, and retards or prevents their healing.

102. In a paper on *amaurosis from lesions of the eyebrow or orbit*, Fernandez reports five cases under his own observation, in three of which he observed undoubted atrophy of the papilla, and in the remaining two loss of vitality and rapidly approaching atrophy. In none could the existence of glaucomatous phenomena be suspected. He then experimented upon animals, by making incised and lacerated wounds in the neighborhood of the supra-orbital and infra-orbital nerves. His conclusions are as follows: 1. Amaurosis following wounds of the eyebrow is generally the result of cerebral lesions. 2. Amaurosis here is due to atrophy of the papilla, and this to a cerebral lesion of more or less severity, or to injury to the optic nerve in its passage through the optic foramen. 3. The amaurosis occasioned by the simple irritation of the supra-orbital nerve, from puncture, cicatricial contraction, or any other cause, might be doubted; but, inasmuch as sympathetic amaurosis from excitability of the maxillary branch of the fifth has been observed, the possibility of a similar result as regards the supra-orbital can not be denied. 4. Amaurosis from wounds of the eyebrow resulting in atrophy of the papilla is incurable. 5. Experiments on dogs, inflicting divers traumatic lesions on the supra-orbital region, have not been followed by amaurosis.

103. Carreras-Aragó reports a case of *ivory exostosis of the bones of the orbit*, in which the skull was examined after death. The tumor probably arose from the diploë of the frontal bone, near the orbital arch, toward the external angle. It involved the entire upper margin of the orbit, filled the whole orbital cavity, destroyed the eyeball, involved all the walls of the orbit, and penetrated the cavity of the skull by the optic foramen and sphenoidal fissure. It also extended into the nasal fossæ, and filled the anterior cerebral fossæ. Outside of the orbit it extended into the zygomatic fossa. It was very dense and compact, white as ivory, without any medullary spaces or Haversian canals, and weighed about five hundred grammes. The growth probably began in the ossification of the periosteum of the frontal sinuses, and perhaps also of the ethmoidal sinuses. The exciting cause was no doubt a wound given with a sickle upon the forehead and orbital arch, but how long before death was not known. The cerebral symptoms were intense convulsions, occurring with greater frequency and violence, and ending in imbecility which lasted till death.

106. Leber has made some observations upon *empyema of the frontal sinus* and the secondary symptoms in the eyes. The course of the disease is very chronic, and it may exist for many years before the anterior wall of the sinus becomes absorbed and a fluctuating tumor presents. The symptoms are a swelling of the upper and inner orbital margin, slight exophthalmus, sometimes diplopia from paresis of the trochlearis, and epiphora from compression of the lachrymal sac. Leber's third case was of special interest, partly because of transient cerebral symptoms and partly because of a visible pulsation of the contents of the cavity, which might have caused a suspicion of the existence of a communication with the cranial cavity. Bœckel, however, proved, as far back as 1872, that this was only a symptom which could be observed in all cavities provided with bony walls and a small opening, which contain vascular tissues.

107. Leber's paper upon *orbital abscess and its connection with erysipelas and thrombo-phlebitis* is based upon his observation of five cases, and is a well-written and very careful study of the subject. His first case was a phlegmon of the orbit ending in phthisis bulbi. In this form of inflammation the thrombo-phlebitis of the numerous small orbital veins plays an important part. In such a case the erysipelatous poison or mycosis enters a small vein, causes an infecting thrombosis and phlebitis, which extends through the veins with great rapidity, and produces in their vicinity suppuration and the formation of an abscess. In the same way the thrombo-phlebitis may extend to the cavity of the skull. Leber is inclined to attribute the same origin to the cases of apparent spontaneous orbital phlegmon, with this difference, that the erysipelas extends downward and inward from the beginning, rather than outward upon the surface. The second case was one of orbital cellulitis following slight facial erysipelas, leading in two days to total blindness of both eyes, and ending in death on the third day from purulent meningitis and thrombosis of the sinuses. This extension from the orbit to the cavity of the skull occurs almost always through the medium of the veins. When both orbits are affected, the cellulitis breaks out simultaneously in both, as when the erysipelas occupies the entire face or middle frontal region; or else, by the anastomosis of the frontal and supra-orbital veins of both sides in the center of the forehead, the thrombo-phlebitis outside the skull is communicated from one side to the other. In Leber's second case the cellulitis seems to have been set up in a backward direction from the skull cavity, instead of having extended from the orbit to the cranial cavity. The third case was one of orbital abscess on the right side, loss of the eye by corneal ulceration, and phthisis bulbi: large abscess in the temporal region and death by multiple cerebral abscess. The abscess in the temporal region was caused by extension of the phlebitis of the vena ophthalmica inferior through the inferior orbital fissure to the pterygoid plexus or internal maxillary vein. The fourth case was an abscess of the left orbit, lid, and temporal region, necrosis of the roof of the orbit, thrombosis of several cerebral sinuses, purulent meningitis, and abscess of the brain. The fifth case was a fibro-sarcoma, which closed the right upper nasal sinus and caused retention of pus, which resulted in displacement and periostosis of the median wall of the orbit, with exophthalmus; recurring inflammations of the orbital tissue and blindness from atrophy of the optic nerve; inflammation of the left parotid gland, aphasia, right hemiplegia, death; thrombosis of both cavernous sinuses and purulent meningitis. Here the inflammation began outside the orbit, and led to the retention of pus in the frontal sinuses, maxillary sinus, ethmoid cells, etc. The paper is one of great interest.

108. Yvert's paper on *vascular tumors of the orbit* is mainly an historical résumé of the subject. He calls attention to the importance of a careful differential diagnosis. There are tumors presenting at the upper and inner angle of the orbit greatly resembling these tumors, which have a vascular connection with the intra-cranial venous circulation. The various forms and degrees of exophthalmus will also aid in coming to a correct conclusion.

109. Schimemi speaks of the *excision of the ophthalmic ganglion* in a case where it became necessary to operate upon a sarcoma of the orbit and maxillary sinus. The tumor was removed, with the floor of the orbit in part, leaving the eyeball intact. The immediate consequences of the operation were immobility of the lower lid, owing to marked recession of the eye; almost complete immobility of the eyeball; complete anæsthesia of the cornea; dilatation and immobility of the pupil. The cornea ulcerated in one spot, but soon healed again. Two months later a blepharoplastic operation was done. Eighteen days later a large corneal ulcer appeared, with hypopyon, which steadily grew worse, until the edges of the lids were stitched together, when it soon began to heal. Schimemi is of the opinion that excision of the ophthalmic ganglion or of the ciliary nerves does not *per se* cause nutritive alterations in the cornea.

112. Samelsohn reports a case of *lithiasis of the lachrymal gland*, a rare condition. It occurred in an infant of three months and a half, in whom the anterior lobe of the left lachrymal gland was very much swollen and contained a sharp, hard, concrete mass, which irritated both lid and eyeball. He removed it through a small incision, and most of the symptoms very soon subsided. A careful chemical and microscopical examination led Samelsohn to conclude that this calculus of the lachrymal gland was not a mere precipitate from the lachrymal secretion, but was a real neoplasm, and that the carbonate and phosphate of lime, which entered into its formation, had caused its extensive calcification and ossification.

113. This tumor of the lachrymal gland bears the ponderous name of *intra-acinous colloid epithelioma*, and occurred in a boy, fifteen years old. Its growth was of unknown duration, but had been accompanied by orbital pains. There was moderate exophthalmus; the tumor was ovoid, its long diameter being transverse, and was not adherent to the skin of the upper lid. It was hard, somewhat painful, lobulated, and adherent to the upper and outer wall of the orbit. There was no disturbance of vision, and very little of mobility. The tumor was enucleated with facility, leaving the eye undisturbed. It was as large as an almond, and proved to be an epithelioma, developed within the acini of the gland, and had undergone colloid degeneration. Five months after the operation the tumor again appeared, and a second operation was done nine months after the first. This time the growth had involved more of the orbital tissue, but was again removed entire, as was supposed. It again recurred, and ten months later had filled the entire orbit, and there were nodules all around the orbital region beneath the skin. The bones of the face were so deeply involved that no further operative interference was to be thought of.

114. Galezowski concludes that *inflammation of the lachrymal gland* is a very rare disease, and that when it occurs it is almost always as an epidemic. The most characteristic signs of the disease are the swelling near the orbital margin, partial chemosis near the external angle, a swelling or tumor in the cul-de-sac, engorgement of the parotid glands, and circumorbital neuralgia. The treatment should be antiphlogistic, the chemosis should be scarified, and preparations of iodine externally and of iodide of potassium internally are indicated. Leeches are rarely necessary. It usually occurs on but one side, though it may occur simultaneously on both sides or pass from one to the other. Galezowski cites six cases, all of which were cured.

117. Risley's experiments upon *homatropine hydrobromate as a mydriatic* have resulted in the following conclusions: 1. In solutions of two, four, and six grains to the ounce, it paralyzes the accommodation; 2. In from sixteen to thirty hours this paralysis entirely disappears; 3. Dilatation of the pupil accompanies the paralysis, and is more persistent; 4. The drug is no more liable to produce conjunctival irritation than atropia or duboisia; 5. It produces far less constitutional disturbance than either of the old mydriatics.

122. Drausart's paper on *pathological relations between the eye and the ear* trenches upon very uncertain ground. His cases are too few to formulate any sound opinion. He concludes that there exist between the eye and the ear certain pathological relations of a reflex character. These relations exist through the medium of the trifacial; thus, a wound of the eye may cause deafness, or else ameliorate an already existing deafness. This action of the eye upon the ear, which seems able to produce a reflex deafness or to improve a deafness, appears to be produced more under certain pathological conditions, such as syphilis, alcoholism, or scrofula.

123. Faucheron has endeavored to prove by experiments upon animals the connection which has been observed clinically to exist between *infra-orbital neuralgia and certain functional troubles of the eyes.* His results agree with the facts of clinical observation. In two dogs he divided the infra-orbital nerve completely; the eye preserved its integrity. In three dogs he irritated the nerve by the faradaic current, and the conjunctiva became injected, the pupil contracted, and the lachrymal secretion was slightly increased. In one dog, in which the fascicles of the nerve were crushed, there resulted enormous congestion and chemosis of the conjunctiva and turbidity and ulceration of the cornea.

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5. Boucheron cites cases of *deaf-mutism by compression of the auditory nerve* through the medium of chronic aural catarrh. He compares the mechanism of these cases to that of blindness by compression of the optic nerve in glaucoma, and proposes to designate the process by the name of otopiesis. The necessity of lessening the compressing force is at once indicated, that the auditory nerve may not degenerate and become atrophied. This is done by insufflation of air into the tympanum, pharyngeal cauterization, and the occasional use of the Eustachian catheter.

9. In his article on *microtia*, Hunt believes that the development of the auricle proceeds from the growth of little protuberances situated upon the first and second arches; this growth takes place around a shallow depression which is formed after the arches are united; the meatus is formed at a later stage by an involution that occurs in the depression. The origin of the morbid process of development is in the auricle, and the association of the malformation of auricle and meatus is due to the interruption of a natural order of events, according to which a certain stage of development of the auricle precedes the formation of the meatus. Hunt holds that the embryonic auricle is composed of three principal parts: 1. The little ridge on the posterior margin of the ear opening. 2. The spine of the helix, which in the human embryo fuses with the fold that forms on the posterior margin of the ear opening. 3. The tragus, which in the human embryo develops in the fold of integument bordering the anterior margin of the outer ear opening. The remaining divisions of the human auricle develop secondarily from the ridge described as originating on the posterior border of the outer ear opening.

12. Hedinger gives the history of a peculiar case of *exostosis in the ear.* The patient was a railroad employee, who had suffered for a year and a half from suppurative disease of the middle ear on the right side. The tumor was a secondary formation, due to the chronic inflammation of the mucous membrane of the tympanum. Hedinger agrees with Delstanche in thinking that these aural exostoses are caused by a chronic inflammation of the walls of the external auditory canal, which may exist alone or in connection with similar affections of the middle ear. The growth was near the mouth of the canal, entirely filled the lumen, was immovable, and was as hard as bone. Pus could be pressed out from underneath the lower margin of the growth, and a probe discovered dead bone. The mastoid process was involved superficially, and a Wilde's incision had to be made. Pieces of carious bone came away, and finally Hedinger chiseled off a piece from the tumor, and then treated the case by frequent syringing with solutions of permanganate of potash and carbolic acid and the daily introduction of a laminaria tent. This treatment proved successful in several ways: first, in apparently causing a slow absorption of the exostosis; secondly, in dilating the auditory canal to a large caliber; and, thirdly, in causing a disappearance of the granulations and a cessation of the purulent discharge.

13. Field believes that *ivory exostoses in the external auditory canal* are generally caused by chronic inflammation of the canal, such as might be produced by sea-bathing. They can usually be examined with instruments without causing the slightest pain. The true ivory exostosis is usually bilateral, covered with white, smooth skin, and hairless; it arises near the meatus. The development of such exostoses is insidious, and their very existence is not suspected until the patient discovers that his hearing is rapidly failing. When these exostoses are multiple, they do not, as a rule, cause a great amount of deafness. They are smaller in size, and are not confined to the posterior wall.

14. Knapp thinks that *nitrate of silver in the treatment of chronic eczema of the ear* produces contraction of the softened and swollen integument, and affords protection from moisture, wind, cold, and great heat, better than any other remedy; and may be used in all degrees of intensity, from a mild astringent to a powerful caustic. The parts should first be thoroughly cleansed, the crusts softened and completely removed, and then the surface thoroughly dried, before the agent is applied. After the eschar has formed, the parts should again be gently dried, and covered with picked linen or lint, which has been smeared with pure cold cream, or a one-per-cent. yellow mercurial ointment. The application should be made once a day.

15. Wolf's paper on *the function of the chorda tympani* considers mainly what portions of the surface of the tongue are supplied by the chorda, and is illustrated clinically by a case under his own observation. He considers it an established fact that a sensation of taste is produced, or an indistinct sensation rendered intense, by the mere pressure with the fingers upon the tongue, upon which the substance to be tasted has been laid. In the case under consideration, the paralysis of taste and sensibility comprised the entire triangle, the hypothenuse of which was formed by the edge of the tongue on the left side, the second side being the median line of the tongue, and the base a line uniting the two sides and two centimetres back from the tip. Hence the chorda tympani supplies only the anterior third of the tongue.

18. Ely has during the past two years made some experiments with *skin grafting in the treatment of chronic suppuration of the middle ear*, for the purpose of closing in the cavity of the tympanum. He has used it in cases where the drum membrane was entirely swept away and in cases where part of the membrane was still present. The results of this myringoplasty have not been especially encouraging.

19. Burnett's paper upon *perforations of the membrana flaccida* is based upon an experience of sixteen cases. He finds that posterior perforations are usually attended with great discharge, and connected with mastoid symptoms; they are also the most obstinate and accompanied by profound deafness. Central perforations are most apt to be connected with disease in the external auditory canal, but are least obstinate to treatment, and are not usually attended with such profound hardness of hearing nor so great a discharge. Anterior perforations are most likely to be connected with pronounced disease in the nares, Eustachian tube, and tympanic cavity, and to give exit to a most copious discharge. But they seem to be the most remedial, and are followed by the greatest return to good hearing. The only treatment of worth in such cases is by means of the tympanic syringe, for both cleansing and directly medicating the diseased tympanum.

22. Schmaltz gives an historical *résumé* of the operation of *trephining the mastoïd process*, and cites in detail his own experience in ten cases. He concludes by laying stress upon the value of the thermometer in these cases, and gives his reasons for prefacing the operation in certain cases by Wilde's incision, keeping the wound open and waiting to see if the trephine becomes necessary. He thinks that in many cases the removal of the cortex of the mastoid is sufficient. In sclerosis of the mastoid, found after trephining, he would employ the galvanic cautery.

25. M'Bride divides *auditory vertigo* into three classes: 1. External auditory vertigo may be produced by any foreign body in the meatus, if only it press with sufficient force on the drum head. Such pressure will, through the chain of ossicles, act upon the fluid of the labyrinth, and produce there a change of tension, resulting in giddiness and tinnitus, the former symptom probably being due to irritation of the canals, and the latter to the cochlea. 2. Auditory vertigo from middle-ear disease, the most common form of all. 3. Auditory vertigo from internal-ear lesions. Many of these internal-ear cases are secondary to old-standing tympanic disease. The diagnosis of affection of the labyrinth occurring in a previously healthy ear is not difficult. The characteristic symptoms coming on suddenly, the absence of any history of former deafness or tinnitus, impaired bone conduction, with absence of signs of middle-ear disease, all point to the internal ear as at fault. When Ménière's symptoms are present in a case of chronic middle-ear catarrh, care should be exercised in arriving at a diagnosis, for it is still a doubtful point how far increased tension may, by preventing perosseal audition, simulate organic disease. Experience has shown that, after the age of fifty, bone conduction is often impaired or absent. This is attributed by some authors to senile degeneration of the auditory nerve, by others to changes occurring in the cranial bones.

28. Moos's paper on the *diseases of the ear in locomotive engineers and firemen* is an interesting practical contribution to otological science. He finds that these two classes of men are liable to affections of the ear with noticeable decrease in hearing, usually on both sides, which may be attributable to their employment. This acquired deafness appears to be more dangerous than color blindness as regards the signal code, because the latter is a congenital defect, which can be defined precisely before the individuals are put on active duty, while the deafness is an acquired disease, slow in its approach and often unknown to the person affected. The ears of these employees should be examined very carefully before a certificate of fitness for duty is given, and this should be done only by an expert otologist. When a definite appointment has been made, the man should be warned that his occupation may injure his hearing, and that he should present himself for examination when he notices the slightest defect in this respect. The hearing of engineers and firemen should be tested at least once in every two years, so as to avoid all possible danger. The disease present in these cases belongs almost always to the sclerotic form of catarrh of the middle ear.

29. Hasseler has examined *the condition of the ears in typhoid fever*, in forty-one cases. He finds that during the first week tinnitus and hardness of hearing are the rule, and during the second and third weeks they are frequent. The prognosis is good if the receptive apparatus is involved, but is very serious if the phenomena do not diminish when convalescence is established. The symptom which ends most favorably is the external otitis; but it rarely occurs alone, being generally accompanied by purulent otitis media. It involves the superficial layers of the canal. The alterations of the middle ear are of two kinds: the first, without suppuration, accompanied by tinnitus, is due to catarrh of the pharynx and consecutive obstruction of the tube; and if the process does not end here, the tympanum becomes the seat of catarrhal inflammation also. The otitis media of typhoid fever has nothing peculiar in its course, the severe pain ceasing with the appearance of the discharge. It is sometimes complicated by an external otitis and a congestion of the labyrinth. Functional alterations of the internal ear are frequent in the beginning, and may be due to hyperæmia of the labyrinth and serous infiltration, the pernicious effect of the poisoned blood, the depression of the nervous system, etc.

30. After speaking of *the aural complications of scarlatina and diphtheria*, with throat lesions, Blau considers the rather rare primary diphtheritic inflammation of the external auditory canal. It is either limited to the canal and auricle, or it may extend to the tympanic cavity. It is always accompanied by very severe pain and marked febrile symptoms. After the diphtheritic ulceration has healed, a contraction of the auditory canal or of the Eustachian tube may occur, which sometimes leads to total obliteration of the caliber of these passages. In the ear disease accompanying or following typhus fever, Blau speaks of the possibility of changes occurring in the muscles of the tympanum, like those occurring in the other muscles of the body, which consist in granular or waxy degeneration, and which may be the cause of the deafness. In the symptoms of ear disease as a complication of epidemic cerebro-spinal meningitis, Blau regards the pathological condition as a purulent inflammation of the labyrinth, which may be an extension from the inflamed meninges, or may arise independently. The prognosis of this form of aural disease is very unfavorable.

35. Clerk gives the following *directions for extracting the petrous bone at an autopsy of the ear:* Remove the soft tissues in a flap, whose anterior border is made by an incision along the posterior margin of the ramus of the lower jaw. Make another incision about half an inch behind the mastoid and nearly parallel to the former. Connect these by a transverse cut above the ear. Dissect this flap downward and close to the bone, with the ear attached. The articular end of the jawbone being pressed slightly forward, pass the chisel through the thin bony roof of the articular cavity, and continue the line upward through the posterior root of the zygoma. Cut then transversely in a line parallel to the zygomatic root and about a quarter of an inch above it. Continue this line backward through the parieto-mastoid suture till it meets the posterior section. The chisel should now be used as a lever, and the bone pressed out from above and also at the sides. Lastly, pass the chisel between the spinous and styloid processes, and against the root of the former. This last point of connection being severed, the bone can easily be shelled out, leaving the dura mater intact.

SEMI-ANNUAL REPORT ON ANATOMY AND PHYSIOLOGY.*

No. II.

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* I am indebted to Mr. Alexander Duane for assistance in the preparation of this report.—A. L. R.

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2. Langer makes a special study of *the form and size of the human body.* Some of his conclusions are here reproduced. 1. Preponderance in the length of the lower extremities indicates a diminution in the space allotted to the vital organs and, in so far, a lessened power of resistance to disease; 2. The leg and the thigh are very uniformly of the same length, and this is often the case even in pathological states; 3. The forearm is usually shorter than the arm, although in infants it is of the same length; and, in people whose upper extremity is exceptionally long, this is due to increased length of the forearm.

4. This article contains numerous facts and full statistical tables in regard to *the temperature of newly born* children. Among the more interesting items, we note the proofs adduced of the production of heat by the child in utero; the measurement of the infantile temperature during delivery; and the relation between the maternal temperature and that of the child. Further, the course of the temperature during the post-natal week, its diurnal variations, and the effects upon it of natural and artificial alimentation, respectively, are well set forth. The number of cases examined (101 by the author himself and many more by other experimenters whose results he cites), renders Sommer's paper a valuable contribution to the statistics of physiology.

5. The *perforating fibers of Sharpey*, which unite the lamellæ of bone together, have been carefully studied by Capon, who gives the following account of them: They arise in part from the periosteum, and take a direction either nearly parallel to this membrane or at right angles to it. They then enter the lamellæ, where they bend upon themselves and are lost, or else pass on into the Haversian canals, to be attached to the walls of the vessels therein contained. Other fibers arise from the reticulated bundles described by Vlacovich, and have a course similar to those of periosteal origin. The aid of polarized light has been brought in to show that the fibers run in all directions and into all the lamellæ, being often so numerous as to constitute a true fibrous stroma for the osseous substance. [This study is interesting, as showing the applicability of polarized light to the solution of microscopical problems. The analogy which the author suggests between the Haversian canal and a lymph space seems to us to afford some support to the theory of the hæmatopoietic functions of the osseous marrow.]

6. This is a preliminary note, intended as a preface to a detailed account of *the mode of ossification of the phalanges*, which is shortly to appear. It points out that the diaphyses of the ungual phalanges of the digits offer an exception to the general law of ossification of diaphysal bones in the fact that the ossific changes begin at the tip, and not in the center of the diaphysis. The intra-membranous subperiosteal ossification and the irruption of osteoblastic sub-periosteal tissue are also first perceived at the tip. The expanded portion of the phalanx, which bears the nail, claw, or hoof, is not preceded by cartilage, but is formed entirely by an outgrowth of the sub-periosteal bone.

10. Speck, from the result of experiments made upon himself, decides that *the effect of cooling of the body upon tissue metamorphosis*, as measured by the amount of carbonic acid exhaled, amounts to nothing.

13. This is an account of investigations upon *the respiratory rhythm in pregnancy, labor, and puerperal eclampsia.* Bar shows that, contrary to the prevalent doctrine, breathing in pregnancy is carried on mainly by the diaphragm, which occupies its usual level, unless the uterus is preternaturally distended. He accordingly attributes the dyspnœa, which may occur in the latter days of utero-gestation, to changes in the blood. In the first stage of labor a variety of Cheyne-Stokes respiration was observed, and the author describes the same phenomenon as existing in a case of puerperal eclampsia. Cuts of the pneumographic tracings, on which the conclusions are based, accompany the article.

14. Thoma, in a communication on

the weight of the heart, states that its relation to the total body weight is approximately the same at all ages. He thinks that the determination of this normal relation will be of great value in fixing the degree of pathological variation. No data of the investigation from which the conclusion was drawn were given in this article.

15. Langer points out the existence of *foramina Thebesii*, not in the left auricle merely, but in all the other heart cavities as well. This fact was known to Thebesius himself, who considered these foramina to be the openings of minute cardiac veins. The latter view, after having fallen into some disrepute, has been revived by Langer, who has demonstrated its accuracy by injecting the vessels. The veins which empty through these foramina arise from a capillary network in the heart muscles and in the sub-endocardial connective tissue, and have no immediate connection with the coronary veins. They are destitute of valves.

16. By applying the cardiograph to different points of the human thorax, Marey has been able to demonstrate *the difference between the pulsation of the right and left sides of the heart.* That this difference corresponds to a variation in the intra-ventricular pressure, is shown by the fact that the trace given by the right ventricle is profoundly altered when respiration is arrested, while that of the left ventricle presents waves answering to the contractions of the aorta.

19. The experiments of Ragosin and Mendelssohn on *the movements of the brain* were made upon a man whose skull had been partially destroyed by necrosis, and the dura mater perforated. A specially modified form of the cardiograph was so applied as to record graphically the cerebral movements; and, at the same time, traces were taken of the pulse and respiration. A comparison of the three records proved the existence of the following movements: 1. Those synchronous with the arterial pulsation and, in some cases, even showing dicrotism; 2. Those produced during forced respiration, and corresponding to the respiratory variations of arterial pressure; 3. Those independent of the pulse and respiration, occurring three or four times a minute, and analogous to the rhythmic contractions observed by Schiff in the superficial arteries. These results are confirmatory of those obtained by previous investigators whom the authors cite.

20. Richet, after describing a new instrument for measuring *the carbonic acid of the blood* by the colorimetric method, produces some facts in regard to the presence and function of this ingredient, which, however, do not differ from those already contained in our text-books of physiology.

21. Cathcart traces *the history of the blood-globules*, from the date of their discovery by Swammerdam to the present time, with a somewhat complete *résumé* of the theories as to their microscopical characters, functions, and modes of origin. His chief endeavor seems, however, to be an attempt to prove the marrow of bone to be an important agent in their creation. He discusses at some length the lymphatic, splenic, and hepatic theories of production, but believes that further pathological research in cases of leucocythæmia will show proportionate changes in the bone marrow; thus indirectly confirming the observations of Neumann, Huber, Waldeyer, Pepper, Wood, and others. The article shows commendable research.

22. The *distribution of blood-corpuscles in the cutaneous capillaries* varies, according to Kostjurin, in different parts of the body. Thus, in thirty-four subjects whom he examined, the blood drawn from the clavicular region, when compared with that taken from the plantar surface of the toes, showed an excess of from ten to forty per cent. in the quantity of red globules. This difference is referable, he thinks, to the difference in rapidity of the circulation in the two parts.

23. *The effect of certain positions assumed in gymnastic exercise on the cerebral circulation* has been made the subject of investigation by Corra. It needs no experiment, of course, to prove that the blood is subject to the physical laws of gravitation and the centrifugal force; but, as showing how far this influence extends, and what, consequently, are the disastrous results of such exercise on the living organism, the facts adduced by the author are of practical value. The experimenter limited his experiments to suspension and gyration of dogs, and recorded the blood pressure in the different parts of the body.

27. An *accessory submaxillary gland*, with a duct opening into the duct of Wharton, has been found by Nitot in one half of a considerable number of autopsies made by him. It is situated near the sublingual gland, upon the genio-hyo-glossus muscle, and is in intimate relation with the lingual nerve. The interesting features of this discovery are the analogy which this accessory gland bears to the socia parotidis, and its possible importance in connection with the pathology of ranula.

28. Bocci's *new method for producing a gastric fistula* is essentially as follows: A fasting dog is supplied with food until his stomach is thoroughly distended. A trocar is then plunged into the organ, carrying along with it a cannula. The latter is so constructed as to be retained in the wound on the withdrawal of the trocar, and to be held against the wall of the stomach by a movable flange which can be worked from the outside. After a few days, at the utmost, healing is complete, and the cannula can be withdrawn when necessary. The advantages claimed for this procedure are: 1. Its application is simple, speedy, and certain; 2. The pain inflicted is slight; 3. The wound heals by the first intention and without danger of complications; 4. Gastric juice can be collected very soon after the operation; 5. Permanent closure may be obtained, if desired, by subsequent cicatrization, after the cannula has been withdrawn. [The instrument devised by the author is a most ingenious one, and will merit inspection.]

30. Uffelmann's paper relates to the percentage of *fat in the fæces of infants*. It contains the results of experiments upon seven children, three of whom were hand-fed. He concludes that the amount of fat present varies widely in health, being dependent upon the constitution of the food and its digestibility, and upon the assimilative power of the individual. A case of bronchitis with fever is noted, in which the percentage was largely increased. He points out that the ordinary methods of examination are deficient, in that they leave out of consideration the fats which exist in a saponified state.

38. Von Drozda contends that *the habitual use of the left side of the brain*, in preference to the right, applies not only to the production of voluntary movement and to phonation, but also to the reception of impressions by the special senses. On this view, the right eye is superior to the left, in the same sense that the corresponding hand is superior to its fellow; the difference lying not in the capacity of the organs themselves, but in the receptivity of the corresponding hemispheres of the brain. Experiments upon himself seemed to bear out this theory, so far as the eye was concerned, and similar results, he thinks, may be obtained in regard to the other senses. [The author's researches, although highly interesting, share the uncertainty of all experiments made upon a single subject. The average of many comparisons would be required in order to establish so general an hypothesis. For this end the experiments (consisting of the alternate use of either eye while reading) are sufficiently simple and deserve repetition. The most valuable part of the paper is the lengthy summary of previous investigations in this field.]

39. Extirpation of *the motor centers in the brain* of young dogs does not, unless very extensive, produce permanent disturbance of motility. Moreover, examination of the spinal cord, undertaken to determine the existence of secondary degeneration in the efferent fibers, gives a negative result. These facts, so different from what obtains in the case of man, have led Binswanger to conclude that in this animal the so-called motor centers are really only "side stations" on the road from some as yet undiscovered central depot of force.

40. *The associated movements of the upper and lower limbs* are, it is believed, presided over by a center situated in the paracentral lobule of the brain. A confirmation of this hypothesis is found in the case related by Delmas, in which a blow upon the head, just opposite the left paracentral lobe, was followed by a complete paralysis of the right arm and leg without any involvement of the trunk [the associated monoplegia of Charcot].

41. Elevation of the *cerebral temperature*, to the extent of 1° C., is found by Maragliano to result from the use of single large doses of potassium bromide. The rise is apparent in from one and a half to two and a half hours after the drug is taken, and persists for a few hours. At the same time a slight increase in the axillary temperature was noted. The latter observation, it is acknowledged, is not in accordance with the investigations of others who have worked in the same field.

42. Debove and Gombault have succeeded in demonstrating *the arrange-*

ment, after decussation, of the sensory fibers of the medulla and their relation with the motor fibers in the anterior pyramids. According to previous views, the sensory fibers pass either on the outer side of the opposite anterior pyramid (Huguenin), or into its posterior border (Sappey and Duval), but, in any case, have no connection with the motor filaments. On the other hand, the researches of Debove and Gombault, upon the medulla of a man who had suffered from amyotrophic lateral sclerosis, seem to prove that there is a pretty intimate union between the two kinds of fibers in the substance of the anterior pyramids. In this case the sclerosed tissue was deeply stained by carmine, while the normal sensory nerves were not affected, and the differentiation between the two was, therefore, readily made. In sections made near the beginning of the sensory decussation, it was observed that all the sensory fibers, after crossing to the opposite side, entered the anterior pyramids and blended with the motor fibers. In sections made at a higher plane, however, although the majority of fibers pursued this course, a portion of them, springing from the deep border of the decussating band, passed entirely outside of the pyramids and took a direction vertically upward.

43. The frequent occurrence of an accessory, or *fourth frontal, convolution* in the brains of criminals is noted by Benedikt. It was found to exist, more or less completely developed, in the majority of brains of this class in his possession. It originated usually by a bifurcation of the middle frontal convolution, occasionally by a bifurcation of the superior frontal convolution. Other points of interest are presented, including the occurrence of a *fifth convolution.* These facts the author regards as the expression of a great pathological law, that atypical structure is the chief agent in the production of atypical (morbid) performance of function.

45. Debove's *new method of preparing sections of the spinal cord* for the microscope consists of the following steps: 1. Maceration in a four-per-cent. solution of bichromate of ammonium for three weeks; 2. Maceration in a carbolized gum solution for three days; 3. Maceration in alcohol for three days; 4. Sections are now cut and placed in a saturated solution of picric acid, where they remain for twenty-four hours. This latter acts as a mordant, and the subsequent staining with carmine can be accomplished within twenty minutes. By this procedure it is claimed that a consistence better suited for section cutting is obtained, as well as a completeness of coloration which could not be secured by any method of preparation previously employed. [Gerlach used the bichromate-of-ammonium solution, of a strength of from one to two per cent., for hardening specimens of the spinal cord. He, however, employed chloride of gold as a staining agent. (Orth, "Cursus der normalen Histologie," p. 238.) For the demonstration of the course of nerve fibers and the differentiation of gray and white substance, no coloring agent seems to act so well as hæmatoxylin. Carmine is perhaps better for the demonstration of the nerve cells, and we have obtained very fair coloration by rapid staining in carmine ink.]

50, 51, 52, 53. Dastre and Morat endeavor to prove the existence of *vaso-dilator nerves originating in the cervical sympathetic*, and distributed to the labio-buccal region. They base their conclusion on the fact that irritation of either sympathetic trunk produces vascular engorgement, on the same side of the face, within the region specified, while the surrounding parts are pale from a simultaneous vaso-constrictor stimulation induced by the operation. Similar fibers, likewise originating from the sympathetic, and having a varied distribution, have already been described by the authors. [In general, this kind of nerve action has been attributed rather to the cerebro-spinal than to the sympathetic system. Laffont's experiments, however, which are recorded in the same journal, seem to prove pretty clearly the existence of vaso-dilator fibers in the splanchnic; and, moreover, the frequent occurrence of the two kinds of fibers in one nerve shows that their consignment to distinct portions of the nervous system is not in all cases justifiable.] —— If, in the dog, the superior cervical ganglion of the sympathetic is removed, and the trunk, formed in this animal by the union of the cervical sympathetic with the pneumogastric, is divided, irritation of the proximal end of the severed nerve will still produce the effect above described, but it will now be apparent upon the *opposite side of the face.* This curious decussation, which does not occur if both ganglia are intact, takes place through the sympathetic, the stimulus passing thence into the pneumogastric nerve of the opposite side. ═══ The authors, in reply to certain strictures by Laffont upon their deductions, bring forward various arguments confirmatory of their position. ═══ Finally, Morat goes so far as to assert that *all the true vaso-dilator nerves* originate in the sympathetic system. Apparent exceptions, such as occur when the sciatic is stimulated, he believes to be evidences of paralytic distention consequent upon a primitive vascular constriction.

54. *The vaso-motor nerves of the lung* are derived, according to Franck, from the upper cervical ganglion of the sympathetic; their primary origin, however, being in the cervico-dorsal region of the cord.

55. Sommerbrodt points out a *mechanism of compensation by which the action of the lungs and of the heart is coördinated.* Thus, a rise in the intrabronchial pressure (as occurs in singing, crying, coughing, etc.), by irritating the sensory nerves of the lungs, excites a reflex depressing action on the vasomotor and cardio-inhibitory nerves. The resulting vascular dilatation and acceleration of the heart's action react upon the lung in two ways. They prevent the natural tendency to stasis of the blood in the bronchial walls, and they insure the rapid renewal of oxygen, demanded by the increase in pulmonary activity.

57. Nawrocki confirms very fully the statement of Luschinger, that in the pig *the nerves going to the sweat-glands* of the snout do not pass through the facial but through the fifth pair. They may be traced back through the superior cervical ganglion to the dorsal sympathetic, in the space between the third and fourth communicating branches. From this point they reach the spinal cord by the anterior roots of the second, third, and fourth dorsal nerves.

58. Bufalini, after trying all the methods in use for demonstrating *the axis-cylinder of nerve fibers*, has finally adopted the following procedure, as the most satisfactory. After a twenty-four hours' immersion in Müller's fluid, the fiber is left for several days in a one- to two-per-cent. solution of corrosive sublimate, which must be changed as often as it becomes turbid. The fiber is then taken out, teased with needles, colored with picro-carminate of ammonium, the color is fixed by the action of dilute alcohol, and the preparation, after dehydrating with absolute alcohol, is mounted in damar lac.

59. *Artificial glycosuria may be produced* by stimulation of the central end of the pneumogastric, and especially of its depressor portion (which may run as a separate nerve), or by painful excitation of the sensory nerves in general. The latter circumstance, undoubtedly, explains the occurrence of diabetes in certain painful acute and chronic affections. The stimulus is conveyed to the medulla, and from that point it travels down the cord to the origin of the *first three dorsal nerves.* These transfer it to the sympathetic, and it finally reaches the liver and other abdominal viscera by the agency of the great splanchnic nerve. Laffont's experiments appear quite decisive, both as to the *path of the impulse* and as to its essentially *vaso-dilator character.* [Cyon's experiments seemed to show that the splanchnic was a vaso-constrictor, not a vaso-dilator, nerve. It may, however, act in both capacities, as some other nerves, the sciatic, for instance, are considered to do (Foster, "Text-Book of Physiology," 3d ed., p. 223).]

60. *Section of the recurrent laryngeal nerve* in man, as occurring in two cases reported by Krishaber, caused loss of the power of phonation, but no embarrassment in breathing. The asphyxia, produced in young animals by this operation, the author attributes to spasm, and not to paralysis of the glottis.

61. *The normal tissue-changes in hypnosis* undergo alteration, the elimination of the phosphates being relatively diminished. This fact, which obtains in catalepsy as well, is proof, according to Brock, that those tissues which are abundant in phosphorus, i. e., brain and nerve substance, no longer undergo the usual metamorphosis, and are hence very far removed from their condition during natural sleep.

62. Some remarkable *effects of the local application of chloroform* have been brought to light by Brown-Séquard. They are: 1. The production of profound coma, with the pathological changes and symptoms of syncope; 2. Increase in the excitability of nearly all the voluntary muscles and of their supplying nerves; 3. Persistence of this excitability for a longer period than usual after death; and 4. Diminution of the excitability of the lateral half of the diaphragm and of the corresponding phrenic nerve on the side opposite to that to which the chloroform was applied. Hénocque, who reports Brown-Séquard's experiments, justly characterizes them as highly important and deserving of repetition.

63. Laborde's experiments to determine *the function of the cochlea* were made upon the guinea-pig, an animal in which the organ is particularly accessible. The following facts were noted: 1. Destruction of the cochlea had no effect in the production of vertigo or of disturbances of coördination; 2. Destruction of the cochlea produced complete deafness, which, however, did not appear until several days after the operation. From these data he concludes: 1. That the auditory nerve contains both motor and sensory filaments, the former being distributed to the semicircular canals, the latter to the cochlea and to the saccule and utricle; 2. That the cochlea is not the only organ for the appreciation of sound, the utricle or saccule participating in this function to some unknown extent. The appearance of deafness when the cochlea alone has been injured, he attributes either to extension of inflammation to the utricle and saccule or to the formation of a rigid cicatrix, preventing the vibration necessary for the transmission of an auditory impulse. [The author has, apparently, operated in three cases only. In one animal, in which hearing persisted till the time of death, a portion of the cochlea was found intact, so that the results of this experiment can hardly be regarded as positive evidence. In another case, in which total deafness ensued, no autopsy had as yet been made, so that the extent of the lesion was undetermined. His researches, therefore, are not definitive, and need the corroboration of further investigations.]

64. The researches of MacMunn on *the coloring matter of human urine* are sufficient to warrant the following conclusions: 1. That urobilin can be separated as one of the coloring matters of the urine; 2. That it is a brownish-red pigment, which contains carbon, oxygen, hydrogen, and nitrogen. It is soluble in alcohol, chloroform, acidulated water, and acids; 3. That it is capable of existing in different states of oxidation; 4. That it is derived from one of the coloring matters of the bile; 5. That, like hæmoglobin and hæmatin, it appears to be an unstable body, which easily splits up into decomposition products on treatment with reagents, each giving a peculiar spectrum.

65, 66. The experiments of Russell and West are designed to show the accuracy of the previous statement of Parkes, that 90 per cent. of *the total amount of nitrogen in the urine* is excreted in the form of urea, and to decide whether the same holds good in disease as well as in the state of health. To determine this point, two classes of experiments were made, one upon patients in the hospital suffering with disease of all types, the other upon persons in a state of health. In the first class of subjects, the diet and the amount of muscular exercise were regulated by the condition of the sufferer alone; while, in the second class, the amount of diet was fixed, and absolute rest insured. A new process of estimating the total amount of nitrogen was employed, as the method previously used by these investigators was deemed less reliable. The conclusions drawn seem to prove that the same relative percentage exists between the total urea excreted and the total of nitrogen in all conditions of the body; and that Parkes's rule may be considered as reliable in thus estimating the amount of nitrogen from the urea basis, with the single exception of those rare cases of acute yellow atrophy of the liver, in which leucin and tyrosin take the place of the urea. ═══ West first discusses the comparative merits and demerits of the two ways adopted by most experimenters to determine the total amount of nitrogen excreted in the urine; these being (1) the absolute starvation of the patient, thus stopping the supply of nitrogen, or by giving only non-nitrogenized food; and (2) a reduction of the ordinary diet to the lowest limits compatible with health. The latter plan was used, as less shock to the patient was produced, and the experiments could be longer maintained. The cases selected were those of aneurism, since the symptoms present were those of mechanical pressure rather than those of disease, and since absolute rest could be of benefit in eliminating even those indications of the existing tumor. The patients were fed on a diet gradually reduced until the health was evidently affected, and then gradually increased until the condition of health was "clinically perfect." In all the cases an excess of nitrogen over that contained in the food was found in the urine. The author quotes the experiments of Ranke, in which the patients were deprived of all food, in which the amount of nitrogen excreted varied from 6 to 10 grammes a day; and states the mean of the total experiments collected from different observers as 8 grammes a day when all food was prohibited, while it did not vary much from that standard in patients subjected to a strictly non-nitrogenous diet. He also quotes the investigations of Playfair and Edward Smith upon the subject, in subjects limited to the minimum diet necessary to support life, but who were *compelled to work*, where the amount of nitrogen excreted varied from 9 to 12 grammes a day. The general results are thus summarized: "We may therefore conclude that the minimum amount of nitrogen excreted by the healthy adult man is, on the average, 8 grammes in the 24 hours, this being equivalent to 17·5 grammes, or 260 grains, of urea."

67, 68. Maas and Pinner, experimenting on *the absorptive power of the mucous membrane of the bladder*, found that in man pilocarpine and iodine underwent absorption to a certain extent, the existence of a slight catarrhal condition favoring the process. In dogs, potassium ferrocyanide, salicylic acid, potassium cyanide, and strychnine were readily absorbed. These results were proved not to be due to contact with the urethral membrane. The absorptive capacity of the latter, especially in its pendulous portion, was shown to be very great, substances placed in contact with it producing their systemic effects as rapidly as when injected under the skin. ═══ The researches of Fleischer and Brinkmann are confirmatory of the above-stated facts. Their experiments, with an account of the precautions employed, and a *résumé* of previous investigations, are given in considerable detail.

69. Charcot, in a recent lecture, summarizes the known facts in regard to the urinary secretion, and in particular those relating to *the varieties of albumen which may appear in the urine.* Water, glucose, and albumen are excreted by the Malpighian tufts, while the uriniferous tubules effect the discharge of the different salts. The mechanism by which the water is separated is probably not a mere filtration, as has hitherto been assumed, but rather a true secreting process. The albumens which may be present in the urine are, egg-albumen (normally after the extensive ingestion of uncooked eggs), serum-albumen, paraglobulin, and peptones. [The characters by which these are distinguished are described; they are essentially those given in the appendix to Foster's "Physiology."]

70. Roth finds, in several subjects whom he has examined, *an abnormal connection of the vas aberrans with the so-called hydatid of Morgagni.* In some cases the canal opens at this point into the cavity of the tunica vaginalis, a fact which may serve to explain the not infrequent occurrence of spermatozoa in the fluid of hydrocele. In other cases it ends by a blind extremity in the body of the hydatid, and forms there a cystic dilatation (spermatocele). Another tube is occasionally found here, which is also connected with the hydatid of Morgagni, but does not, like the vas aberrans, originate from the epididymis. This is thought to be the analogue of the Fallopian tube, and, in that case, the hydatid of Morgagni corresponds to the fimbriated extremity. Autopsies on the analogous organs in women in one or two cases bore out this view, although the author seems still to be uncertain whether to regard the appearances as pathological or as cases of normal but arrested development.

71. Patenko has studied *the termination of the nerve fibers in the uterine mucous membrane*, employing for this purpose five uteri which had been removed from the living body for cancer of the cervix, and which were still fresh when examined. In the glands a fine network of non-medullated nerve fibers, with occasional nerve cells, was found, spread upon their free surface and sending prolongations into the substance of the epithelial cells and between the endothelioid elements of the membrana propria. The author thinks that he has established a connection between this meshwork and a similar layer of fibers and nerve cells existing between the mucous and muscular coats of the uterus, and, through the latter, with fibers which pass up through the inter-muscular connective tissue.

Miscellany.

Jaderholm on Methæmoglobine.—Dr. A. Jaderholm ("Nord. med. Ark.," xi, 24) states that researches into the coloring matter of the blood have led him to conclude that methæmoglobine, a coloring matter produced by the spontaneous decomposition of the blood or of hæmoglobine, is the peroxide of hæmoglobine. He has shown that this peroxide presents two different spectra, one with four bands of absorption in a slightly acid or neutral solution, the other with three bands in an alkaline solution; and that it is produced in several ways by the action of different agents upon the blood or upon hæmoglobine. The different agents that change oxyhæmoglobine into methæmoglobine are not all oxidizing agents in the ordinary sense of the term; in several instances the methæmoglobine seems to be produced by complicated reactions which derange the chemical constitution of the albuminates, and which can not be followed out by spectroscopic examination. The author's conclusions in regard to the nature of methæmoglobine do not rest upon the manner of production; the oxidizing agents, it is true, change the oxyhæmoglobine into methæmoglobine, but there are other agents which, without being oxidizers, produce the same effect. The proof that methæmoglobine is oxygenized to a greater degree than oxyhæmoglobine lies in the fact that the reduction of methæmoglobine in an alkaline solution always yields, first, oxyhæmoglobine, which is reduced subsequently into hæmoglobine by the continued action of the reducing agent. This action is a constant one, and, if unobserved, it is doubtless because the quantity of the reagent employed was too abundant and the reduction too rapid, or because the spectroscopic examination did not follow the different stages of the reducing process with sufficient care. At the period of the publication referred to above, the existence of methæmoglobine as a chemical substance, differing on the one hand from hæmoglobine and on the other from hæmatine, was decidedly doubted. Hoppe-Seyler at that time regarded it as a compound of hæmatine with an albuminate, and denied that it was the peroxide of hæmoglobine. It became necessary for the author to repeat the experiments of Hoppe-Seyler. He introduced into a solution of oxyhæmoglobine, purified by repeated crystallization and contained in a glass flask, a sheet of palladium highly charged with hydrogen by having been used as a negative electrode in electrolysis for two or three hours. The sheet had been carefully washed free of all trace of acid reaction. The prolonged contact of the sheet and the water, or of the aforesaid solution, caused a perceptible evolution of gas, which at times became considerable. The flask was carefully closed with a rubber stopper pierced by a small glass tube, which ended in a small rubber tube. The pressure of the stopper expelled each bubble of gas through the tube, and the fluid mounted into the rubber tubing so as to fill the apparatus entirely; a ligature passed around the rubber tube and drawn tight prevented all access of air to the contents of the flask. At the same time, another portion of the same solution of oxyhæmoglobine was inclosed in the same manner in a similar flask, without any sheet of palladium; the two flasks were always placed in identical positions, surrounded by similar conditions, and from time to time they were examined with the spectroscope. These experiments, repeated several times under varying conditions of temperature, always gave the same result: during the first two hours there was no change in the spectrum; after this, the methæmoglobine began to appear in the solution containing the sheet of palladium. It constantly increased; and at the end of a certain time, differing according to the temperature, the oxyhæmoglobine was entirely transformed into methæmoglobine, the brownish-yellow color of which had replaced the beautiful red color of the oxyhæmoglobine. The fluid of the other flask still presented the color and the spectrum of oxyhæmoglobine. The change of the oxyhæmoglobine into methæmoglobine being complete, and the apparatus being placed before the spectroscope, the author detached the rubber tube, and, by means of a fine pipette, introduced a very small quantity of sulpho-hydrate of ammonium into the glass tube. The apparatus was then closed again, and the reduction was followed by spectroscopic examination. It was easy to prove that the contact of the air with the surface of the liquid in the tube during the period necessary for the introduction of the reagent had had no visible effect upon the liquid in the flask. The sulpho-hydrate of ammonium rapidly modified the color of the liquid and caused the spectrum of oxyhæmoglobine to reappear; and it was then easy to follow the final reduction of the latter and the disappearance of its color and spectrum. It is difficult to decide here as to the mode of action of the active hydrogen. It is evident that this action can not be direct, but that it produces chemical effects, the nature of which has yet to be investigated. This subject of methæmoglobine possesses really practical importance. Every blood stain is transformed; the color changes, oxyhæmoglobine becoming methæmoglobine, which is finally replaced by hæmatine. To prove the identity of the blood in the spots so changed, it is necessary to be thoroughly acquainted with the chemical and spectroscopic properties of methæmoglobine. Furthermore, by the study of the development of the different phases of the decomposition under different conditions, the age of the spots may be approximatively determined, which may be of great practical importance in certain medico-legal questions.

Dahl on Purulent Pylephlebitis caused by a Foreign Body.—Dahl observes ("Hosp.-Tidende," Jan. 12, 1881) that purulent inflammation of the portal vein is a tolerably rare disease, but that it occurs more frequently than might be supposed from diagnoses made at the bedside; and this might perhaps be expected from the few characteristic symptoms which it presents. The most frequent cause of the disease is suppurative inflammation in the region of the course of the portal vein, but more especially in the abdominal organs at a distance from the vein. The most frequent locality is probably the region around the cæcum and the vermiform process, while purulent inflammation in the stomach or colon and abscesses in the liver and spleen, are more rarely the seat of origin of the trouble. The portal vein itself may be involved in inflammation of the gall-duct, either by reason of gall-stones, or by the rupture of an echinococcus cyst. Owing to the deep situation of the portal vein, it is but rarely that foreign bodies are able to reach it and cause a pylephlebitis. So far as the author knows, there are only two such cases in literature. The first was reported by Lambron, in the "Archives Générales de Médecine" for 1842. He found at an autopsy a fish bone, which had passed through the posterior wall of the stomach just above the pylorus, and thence through the head of the pancreas, into the superior mesenteric vein itself, which, at the point of lesion, was closed by a thrombus. The portal vein and its branches were filled with a puriform detritus like wine lees. The second case was reported by Dr. von Jani, in a dissertation, in 1866. At the autopsy of an insane patient there was found a metal thread, eleven centimetres long, which had perforated the duodenum, near the pylorus, and lay with one end in the pylorus, while the rest lay close beneath the superior mesenteric vein, the lower end extending into the peritoneal cavity. The portal vein was filled with a loose purulent thrombus, and this gave rise to a purulent pylephlebitis. Dahl himself recently observed a similar case at an autopsy at the Frederik's Hospital, in which a sharp-pointed cylindrical body, about four centimetres long, and of the size of a knitting-needle, resembling one of the spines of a species of palm, was found in an abscess in the omental sac near the head of the pancreas. The history of the case is as follows: The patient was a man forty-one years old, who, during the first half of September, complained of general ill health, and it was probable that at this period the foreign body began to pass from the œsophagus through the canal in the greater omentum down into the omental sac. Here its presence produced a circumscribed abscess, which, in its turn, caused a phlebitis of the portal vein with thrombosis, and the subsequent formation of thrombi in the superior and inferior mesenteric veins. This caused a closure of the peripheral portion of the splenic vein with stasis and resulting swelling of the spleen. The man's first chill occurred on September 17th, when the oldest portion of the thrombus probably disintegrated into a puriform mass, which was carried with the blood current into the liver. Eight days later, he complained of pain in the upper hypochondrium, and the hepatic abscess no doubt began to develop in the lobus Spigelii. The chills recurred again and again. On October 30th the spleen was again examined, and was found reduced almost to the normal size. It is probable that, at this period, the whole thrombus in the portal vein and in the splenic vein was disintegrated, or at least reduced very much in size, for the spleen had emptied its surplus of blood, showing that the splenic vein was open. Four days later the spleen again swelled, owing probably to the formation of a new thrombus, and there was found, on auscultation, a dulled, prolonged expiration around the spine of the right scapula. At this period it is probable that the pulmonary infarctus was developed. Before death no sign was noticed of the presence of the infarctus of the left lung found at the autopsy. On November 12th the spleen was examined for the last time, and found of normal size. At the autopsy, two days later, the spleen was found flaccid and with a wrinkled capsule, proving that at an earlier period it had been larger. There was no thrombus at that time in either the splenic or the portal vein. A diagnosis of such a pathogenesis before death was, of course, as difficult as it proved easy after death. The symptoms were conspicuous by their absence—among them that of pain. The point of origin of the phlebitis, the abscess in the omental sac, was unrecognized and unsuspected, since it caused neither pain nor tenderness on pressure, and, by reason of its deep situation, could not be felt. The hepatic tumor, usually present in this disease, was absent, as there was no large abscess. The pain in the hypochondrium had existed before the patient entered the hospital, but had disappeared. The diminution and increase in the size of the spleen were inexplicable. Diarrhœa, which is met with in most patients, was scarcely noticeable in this case. There was no dyspnœa, and no bloody expectoration to aid in diagnosticating infarctus of the lungs. The only positive signs which pointed toward the diagnosis were the remitting fever, the violent and irregular chills, the emaciation, and the typhoid condition which little by little was developed.

Berner on Poisoning by Duboisin.—Dr. H. Berner ("Nord. med. Ark.," xii, 3) relates a case in which he was himself the victim of the poisoning, after a simple instillation of a one-per-cent. solution of the sulphate of duboisin. At the end of ten minutes vision was obscured, objects appearing diminished in size and increased in distance; the pupil of the fellow eye became dilated *ad maximum*, the accommodation was paralyzed, and there appeared simultaneously photopsia and intense vertigo, accompanied by a sense of pressure in the temples. The intellect and memory were enfeebled, and the patient's condition betrayed marked anxiety, but without delirium. The face was pale, the nose cold, there was tinnitus aurium or deafness. The mucous membrane of the nose, mouth, and pharynx was excessively dry, and there was a sharp, scratching sensation in the throat, but no sensation of thirst. The articulation was thick and nasal, and the respiration was stertorous in the supine posture. The voice was feeble and the tones were false. From the trachea came a saline, frothy secretion, and there was occasional vomiting. The pulse was 88, the respiration frequent and shallow. The arms and legs were paralyzed, with a feeling of profound prostration and cramps in the thighs. As soon as the eyes were closed, there was a tendency to fall. The fingers and toes were at first cold and pallid, afterward warm. Sensation was perhaps slightly diminished. At the end of an hour and a half, there was an abundant excretion of clear urine. This condition, which lasted from three and a half to four hours, was followed by somnolence. The paralysis of accommodation lasted from four to five hours, and the dilatation of the pupil from five to six days. On the following day there was slight perspiration all over the body, with irritable temper and moral and physical prostration.

Krabbe on Hereditary Absence of the Fingers and Toes.—E. Krabbe ("Nord. med. Ark.," xii, 3) reports a communication made to him by Dr. Thorvald Jonsson, concerning a family in Iceland, in which a defect in the fingers and toes occurred in three successive generations. The mother was born without the thumb of the right hand. Two of her six children had no defect, while in four, one girl and three boys, there were three or four fingers and toes wanting. The daughter married a man perfectly well formed, but her child presents a still greater defect than the mother.

Salicylic Acid in Diphtheria.—Dr. Frank Kenyon, of Scipio, N. Y., presented his views upon this subject at the last annual meeting of the Central New York Medical Association, and has kindly sent us an abstract of his remarks, which we condense as follows: The properties of salicylic acid which render it specially adapted to the treatment of diphtheria, are: 1. Its safety of administration, and its general diffusibility through the system. 2. Its antiseptic and antizymotic properties. 3. Its antipyretic effect. 4. Its local action on the affected mucous membrane. Salicylic acid may be introduced into the system in large quantities without danger of injury to the patient. The well-known antiseptic properties of this drug outside of the body may well lead us to believe that it has at least a measure of the same property when taken internally. The local action of salicylic acid in diphtheria is twofold: 1. It acts as a local disinfectant, correcting the fetor, and checking the growth of the diphtheritic pellicle. 2. It acts as a local stimulant, increasing the secretion of the mucous membrane, and thus favoring the exfoliation of the diphtheritic growth by reëstablishing the secretion beneath it and forcibly tearing it loose. This local action is best obtained by frequent small doses, though the antipyretic effect is more apparent when large doses are given. I believe that frequent repetition of small doses is by far the most beneficial locally. My favorite prescription is as follows: ℞ Salicylic acid gr. xx, alcohol ʒj, sulphate of zinc gr. x, glycerine ʒiv, hot water ℥iv, tincture of chloride of iron gtt. iij. M. This makes a wine-colored mixture, pleasant to the taste, so that children readily take it. Of this I give to adults a teaspoonful every hour, and alternate with it the following: ℞ salicylic acid ʒj, alcohol ʒij, syrup ℥ij, M. S. A teaspoonful every hour. To children I give one half or one quarter of these doses, according to the age. I always let the patient swallow the medicine: 1. To secure the antipyretic effect of the acid, and 2, because the saliva and bits of detached membrane are swallowed, and the stomach also requires to be disinfected, to prevent the continual reabsorption of the virulent material. And it seems to me that local applications and gargles are inadequate for the accomplishment of the needed ends, and, the sooner the medical mind is disinfected of the idea that swabs and gargles are essential in the treatment of diphtheritic sorethroat, the better it will be for the patients.

Leprosy in the United States.—At a meeting of the New York Academy of Medicine, held January 20, 1881, the following resolution was adopted: *Resolved*, That a committee be appointed by the President to investigate the extent to which leprosy prevails in the United States. The President appointed as such committee, Drs. H. G. Piffard, F. R. Sturgis, and G. H. Fox. The committee are desirous of ascertaining the actual number of lepers in this country at the present time, and to that end respectfully request any physician who may know of the existence of a case in his neighborhood to communicate the fact to the Chairman of the Committee, at No. 10 West 35th street, New York.

Electro-Massage.—In the "Medico-Chirurgical Quarterly" for January, 1881, the editor, Dr. John Butler, describes and figures a mechanical device which, he says, "includes in itself an electric generator, a rubber, a kneader, a manipulator, and a set of electrodes, all in one." It consists of a metallic roller, covered with chamois leather or other suitable material; an electro-magnet; and a permanent magnet, set in a strong frame, which holds the instrument together. The roller, besides acting as the driving-wheel of the machine, acts also as one of the electrodes. Each revolution of the roller produces twenty-five revolutions of the electro-magnet. The frame is provided with a binding post, to which a conducting cord, terminating in any sort of electrode, is to be attached. The latter electrode being held against some portion of the surface, the roller is made to pass over the part upon which the combined effects of electrization and massage are to be exerted—lightly or with firm pressure, according to the amount of massage desired; rapidly or slowly, in proportion to the rapidity of the interruptions that may be deemed proper. From a limited experience with the instrument, as well as from the reports of those who have made more use of it, we regard it as an excellent contrivance.

Corrigenda.—Dr. Etienne Evetzky wishes the following corrections to be made in his article "On the Growth of Children," etc., which appeared in the February number of the "Journal": In the table, p. 175, for "ounces below weight at birth," read *loss;* for "ounces above weight at birth," read *gain;* p. 182, 13th line from bottom, after "given off," insert *by the lungs;* p. 185, 8th line from bottom, for "105·5°," read *101·5°;* p. 189, 4th line from top, for "fifth and tenth months," read *fifth to tenth months.*

Army Intelligence.—*Official List of Changes of Stations and Duties of Officers of the Medical Department, United States Army, from February 14, 1881, to March 12, 1881.*—Bailey, E. I., Lieutenant-Colonel and Surgeon. The leave of absence granted him December 30, 1880, from A. G. O., extended one month. S. O. 35, A. G. O., February 11, 1881. ═══ Gibson, J. R., Major and Surgeon. To accompany Battery A (Light) and Battery D, Second Artillery, from Fort McHenry, Maryland, to the United States Barracks, Washington, District of Columbia, for temporary duty thereat. S. O. 26, Department of the East, February 11, 1881. ═══ Brown, H. E., Captain and Assistant Surgeon. Relieved from duty at Fort Duncan and assigned to duty at Fort Davis, Texas. S. O. 35, Department of Texas, February 26, 1881. ═══ Meacham, Frank, Captain and Assistant Surgeon. As soon as able to travel, to report in person at Department Headquarters, for assignment to a station. S. O. 32, Department of the East, February 19, 1881. ═══ Girard, J. B., Captain and Assistant Surgeon. Having reported in person, assigned to duty at Fort Verde, Arizona Territory. S. O. 23, Department of Arizona, February 26, 1881. ═══ Elbrey, F. W., Captain and Assistant Surgeon. Relieved from duty at Fort Bayard, New Mexico, and assigned to duty at Fort Union, New Mexico, relieving Assistant Surgeon Kane. S. O. 31, Department of the Missouri, February 12, 1881. ═══ Byrne, C. B., Captain and Assistant Surgeon. To accompany Battery C, Second Artillery, from Fort Johnston, North Carolina—abandoned—to Washington, District of Columbia, and then proceed to Fort Barrancas, Florida, and report to the commanding officer of that post for duty. S. O. 11, Department of the South, February 11, 1881. ═══ Hoff, J. V. R., Captain and Assistant Surgeon. To accompany the four batteries of artillery from Fortress Monroe, Virginia, as medical officer, to Washington, District of Columbia. S. O. 27, Department of the East, February 11, 1881. ═══ Finley, J. A., Captain and Assistant Surgeon. To accompany the battalion of Third Artillery from New York harbor, as medical officer, to the United States Barracks, Washington, District of Columbia. S. O. 27, Department of the East, February 11, 1881. ═══ Taylor, B. D., Captain and Assistant Surgeon, now in San Antonio, will report to the commanding officer at Fort Ringgold, Texas, for duty. S. O. 40, Department of Texas, March 7, 1881. ═══ Gardiner, J. de B. W., Captain and Assistant Surgeon. Granted leave of absence for one month, to take effect when relieved by a medical officer, with permission to apply for an extension of five months. S. O. 16, Department of Arizona, February 8, 1881. ═══ Kane, J. J., First Lieutenant and Assistant Surgeon. When relieved by Assistant Surgeon Elbrey, to proceed to, and report for duty at, Fort Bayard, New Mexico. S. O. 31, C. S., Department of Missouri. ═══ William H. Arthur, George E. Bushnell, H. P. Bermingham, and M. C. Wyeth appointed Assistant Surgeons, United States Army, to rank from February 18, 1881.

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Original Communications.

ON SOME POINTS IN THE ANATOMY AND PHYSIOLOGY OF THE BRAIN, AND THEIR PRACTICAL BEARINGS.*

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It is with a sense of the difficulty of the task that I endeavor to select from an enormous amount of experimental research regarding the anatomy of the encephalon, or brain, such points as seem to be of special interest, or which may be made a basis of reasoning when circumstances arise that demand analytical inquiry into the probable cause of any diseased condition which may exist. The anatomy of the brain is so complex that it can be treated of to advantage only by a minute and fully illustrated description, such as can be found either in exhaustive anatomical works or in treatises upon the special descriptive anatomy of the nervous system. In addition to this cause of impediment, we are, as yet, ignorant of the exact structure of many parts of the brain, and also of the arrangement and physiology of other portions.

The brain consists of a number of ganglia which are connected with each other, and also, by means of the different columns of the spinal cord, with the motor and sensory nerves of the head, the trunk, and the upper and lower extremities. The functions of some of these separate ganglia are more or less completely understood; but there still exist masses of gray substance scattered throughout the brain, the special physiological bearings of which are as yet obscure or completely unknown. The gray matter of the hemispheres of the cerebrum has been, and still is, a source of perplexity to the experimental physiologist; and, while the fact seems proven that distinct portions of this large expanse of gray matter have each some special function, it is still impossible, as yet, to say positively what are the properties of each.

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* Adapted from the author's forthcoming work, entitled "The Applied Anatomy of the Nervous System." New York: D. Appleton & Co.

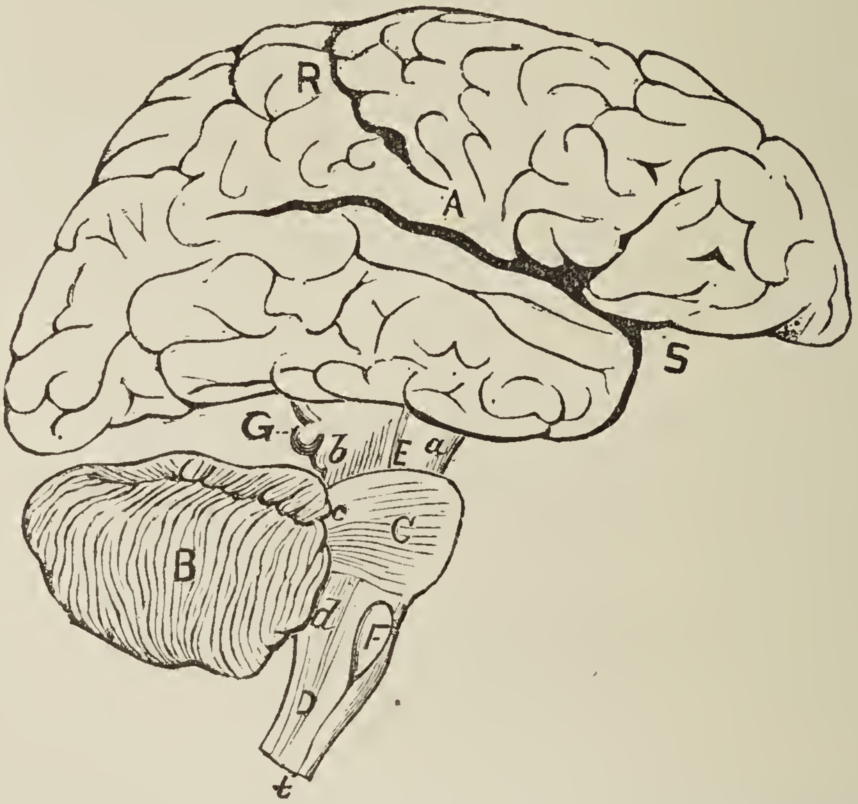

Fig. 1.—A Diagram of the Brain in Profile. (Modified from Quain.)

The cerebrum is represented in this diagram as separated from the cerebellum more than it naturally should be, in order to show certain important parts. A, the *cerebrum;* B, the *cerebellum;* C, the *pons Varolii;* D, the *medulla oblongata;* E, the *crus cerebri;* F, the *olivary body;* G, the *tubercula quadrigemina;* S, the *fissure of Sylvius;* R, the *fissure of Rolando; a, peduncles of the cerebrum; b, superior peduncles of the cerebellum; c, middle peduncle of the cerebellum; d, inferior peduncles of the cerebellum; b,* E, *a,* form the *isthmus encephali.*

If we confine ourselves, then, strictly to the limits of positive information, we can recognize only the following parts as distinct ganglia: 1. The gray matter of the cerebral hemispheres; 2. The gray matter of the cerebellum; 3. The olfactory ganglia; 4. The gray matter of the corpora striata; 5. The gray matter of the optic thalami; 6. The tubercula quadrigemina; 7. The gray matter of the pons Varolii, or the tuber annulare; 8. The ganglion of the medulla oblongata.*

There are other parts of the encephalon which have been the field of speculation and investigation, but the positive knowledge gained has been of a purely anatomical character, and little is yet known of their physiological import. . . . The anatomical arrangement may often suggest hypotheses which are attractive, and which tend to explain the object which Nature had in view in so constructing the part; yet many of these theories depend upon well-observed clinical facts rather than upon experimental research.

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* Darling and Ranney, "Essentials of Anatomy," New York, 1880.

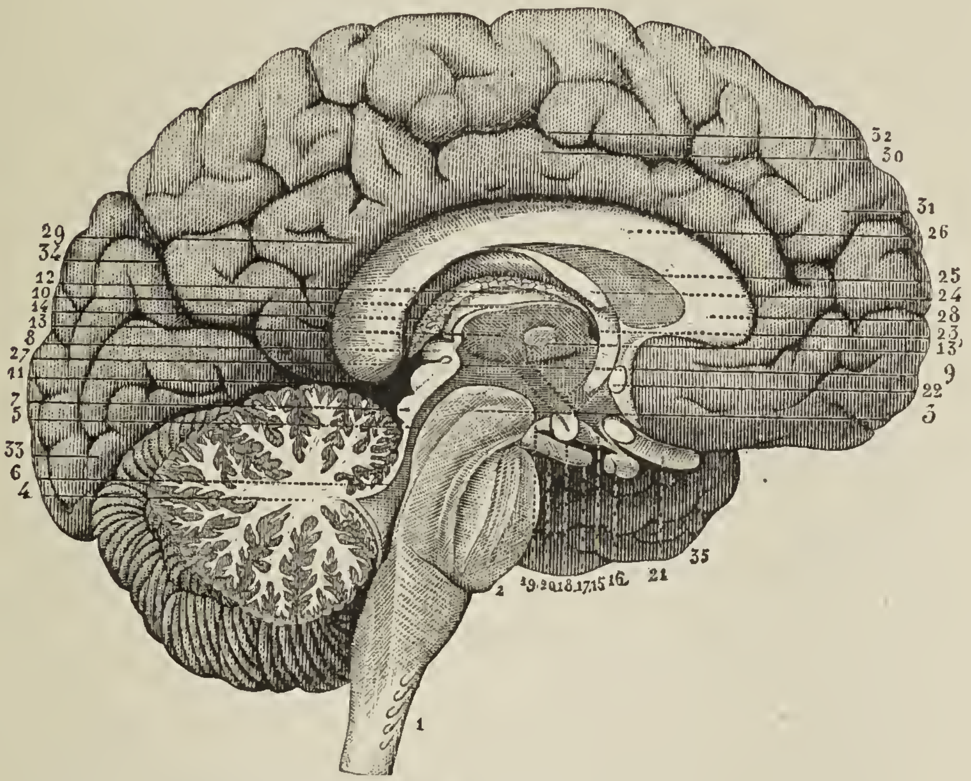

FIG. 2.—VERTICAL SECTION OF THE ENCEPHALON. (Hirschfeld.)

1, *medulla oblongata*; 2, *tuber annulare*; 3, *cerebral peduncle*; 4, *cerebellum*; 5, aqueduct of Sylvius; 6, valve of Vieussens; 7, *tubercula quadrigemina*; 8, *pineal gland*; 9, *inferior peduncle*; 10, *superior peduncle*; 11, middle portion of the great cerebral fissure; 12, *optic thalamus*; 13, 13, gray commissure; 14, choroid plexus; 15, infundibulum; 16, *pituitary body*; 17, tuber cinereum; 18, bulb of the fornix; 19, anterior perforated space; 20, root of the motor oculi communis; 21, optic nerve; 22, anterior commissure of the cerebrum; 23, foramen of Monro; 24, section of the fornix; 25, *septum lucidum*; 26, 27, 28, *corpus callosum*; 29, 30, 31, 32, 33, 34, *convolutions and sulci of the cerebrum.* The olfactory ganglia and corpora striata are not shown in this section.

WEIGHT OF THE BRAIN AND OF ITS COMPONENT PARTS.—The shape of the cranium may indicate the relative size of the different parts of the encephalon, and the circumference of the head and the height of the skull above the orifice of the ear may also relatively indicate the measurements of the cerebrum and its basal ganglia (which are inclosed within it). The variations in the skulls of the different nations indicate an amount of brain which is in direct ratio to the facial angle of Camper.* The average weight of the brain of a healthy adult of the Caucasian race has been given, by most of the prominent investigators upon this subject, as about fifty ounces in the male, and some six ounces less in the female.† In the new-born infant, the weight of the brain in the two sexes is more nearly alike, being about eleven ounces for the male child and ten ounces for the female. The rapidity of growth of the brain is not uniform throughout the different periods of life, since it grows rapidly until the age of seven years, then less rapidly until the age of forty is reached, when it attains its full development, and after that age it decreases in weight about one ounce for every period of ten years.

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* See article by the author on the "Osteology of the Head," "Med. Record," October 16, 1880.

† See the researches of Reid, Tiedemann, Sims, and Quain.

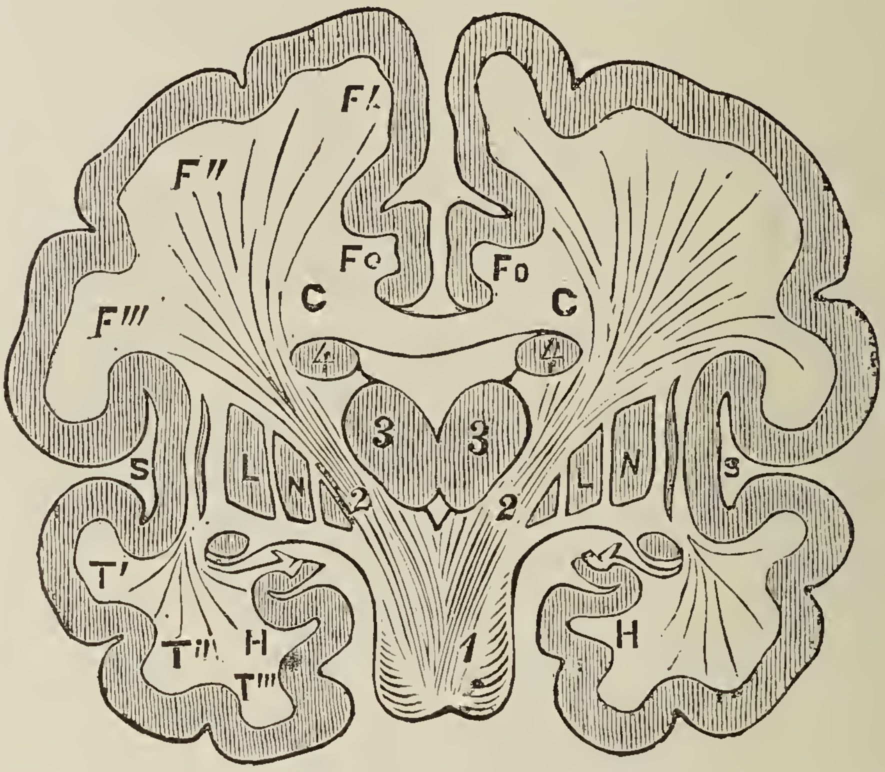

Fig. 3.—A Diagram of the Brain in Transverse Vertical Section. (Dalton.) 1, crus cerebri; 2, internal capsule; 3, optic thalamus; 4, corpus striatum; C C, corpus callosum; L N, lenticular nucleus; S, fissure of Sylvius; Fo, gyrus fornicatus; F′, first frontal convolution; F″, second frontal convolution; F‴, third frontal convolution; T′, first temporal convolution; T″, second temporal convolution; T‴, third temporal convolution; H, gyrus hippocampi.

The comparative weights of the component parts of the encephalon are, in approximate figures, about one fiftieth of the entire weight for the pons Varolii and the medulla oblongata taken together; one tenth of the entire weight for the cerebellum; and the balance of the total weight for the cerebrum and the basal ganglia inclosed within its substance. These proportions also show a slight variation in the two sexes, but not to so marked an extent as to render this statement far from a correct one.

It may be stated as a rule, that the relative proportion of the cerebrum to that of the cerebellum is greater in the intellectual races; and that the cerebrum is developed in individuals in proportion to their intellectual power, although the absolute size may not be taken as a guide to the quality of the mind, since it is undoubtedly true that the brain can be improved *in quality* by exercise, as well as the muscular tissue. That there are important individual differences in the quality of the generating nervous matter is evidenced by the fact that some small brains actually accomplish more and better work than larger ones, and that many women often show a higher degree of mental acumen than men, in spite of the fact that their brains are lighter.

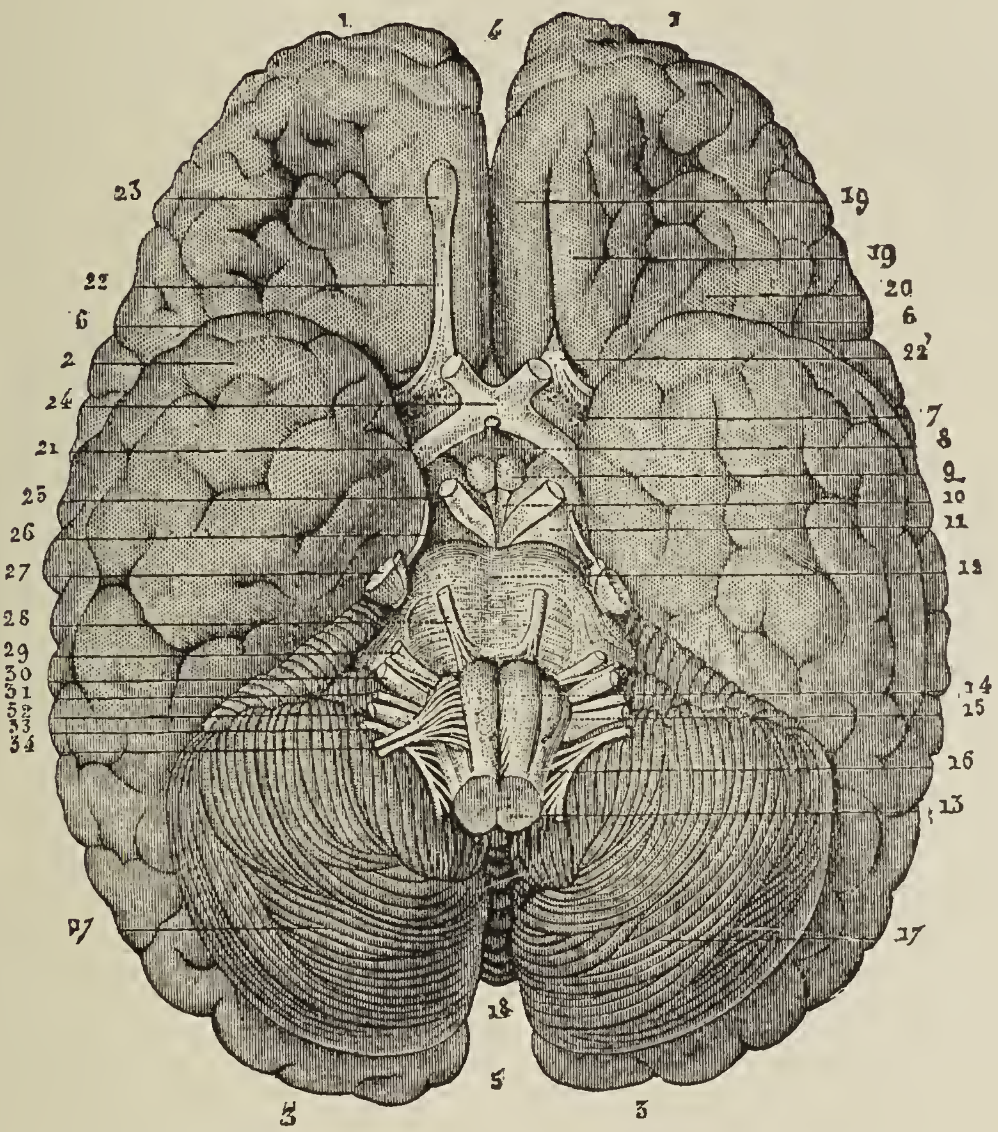

Fig. 4.—Inferior Aspect of the Encephalon. (Hirschfeld.)

1, 1, anterior lobe of the cerebrum; 2, sphenoidal portion of the posterior lobe; 3, 3, occipital portion of the same lobe; 4, anterior extremity of the median fissure; 5, posterior extremity of the same; 6, 6, fissure of Sylvius; 7, anterior perforated space; 8, tuber cinereum and pituitary body; 9, corpora albicantia; 10, interpeduncular space (posterior perforated space); 11, crura cerebri; 12, pons Varolii; 13, medulla oblongata; 14, anterior pyramids; 15, olivary body; 16, restiform body (only partially visible); 17, 17, hemispheres of the cerebellum; 18, fissure separating these hemispheres; 19, 19, first and second convolutions of the inferior aspect of the frontal lobe with the intervening sulcus; 20, external convolutions of the frontal lobe; 21, optic tract; 22, olfactory nerve; 22', section of olfactory nerve, showing its triangular prismatic shape: the trunk has been raised to show the sulcus in which it is lodged; 23, ganglion of the olfactory nerve; 24, optic chiasm; 25, motor oculi; 26, patheticus; 27, trigeminus; 28, abducens; 29, facial; 30, auditory nerve and nerve of Wrisberg; 31, glosso-pharyngeal; 32, pneumogastric; 33, spinal accessory; 34, hypo-glossal.

In a carefully prepared table of the weight of brain substance possessed by men of renown as intellectual giants, as well as those which revealed an unusual development of brain after death, contained in the work of a prominent author,* the following interesting facts are set forth:

The heaviest brains † on record (where the statements are to be relied upon) were possessed by a congenital imbecile and an ignorant bricklayer, both of which outweighed those of Cuvier and Abercrombie; while a boy of thirteen years of age had five ounces more brain than Webster or Agassiz. Such a table shows the utter absurdity of attempting to apply to individuals the rule that the greatest brain power is possessed by the one possessing the greatest amount of brain substance.

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* A. Flint, Jr., "Text-Book of Physiology," D. Appleton & Co., New York.

† Congenital imbecile, aged thirty, 70½ ounces of brain substance; bricklayer, 67 ounces; Cuvier, 64⅓ ounces; Abercrombie, 63 ounces; Webster, 53½ ounces; Agassiz, 53⅖ ounces.

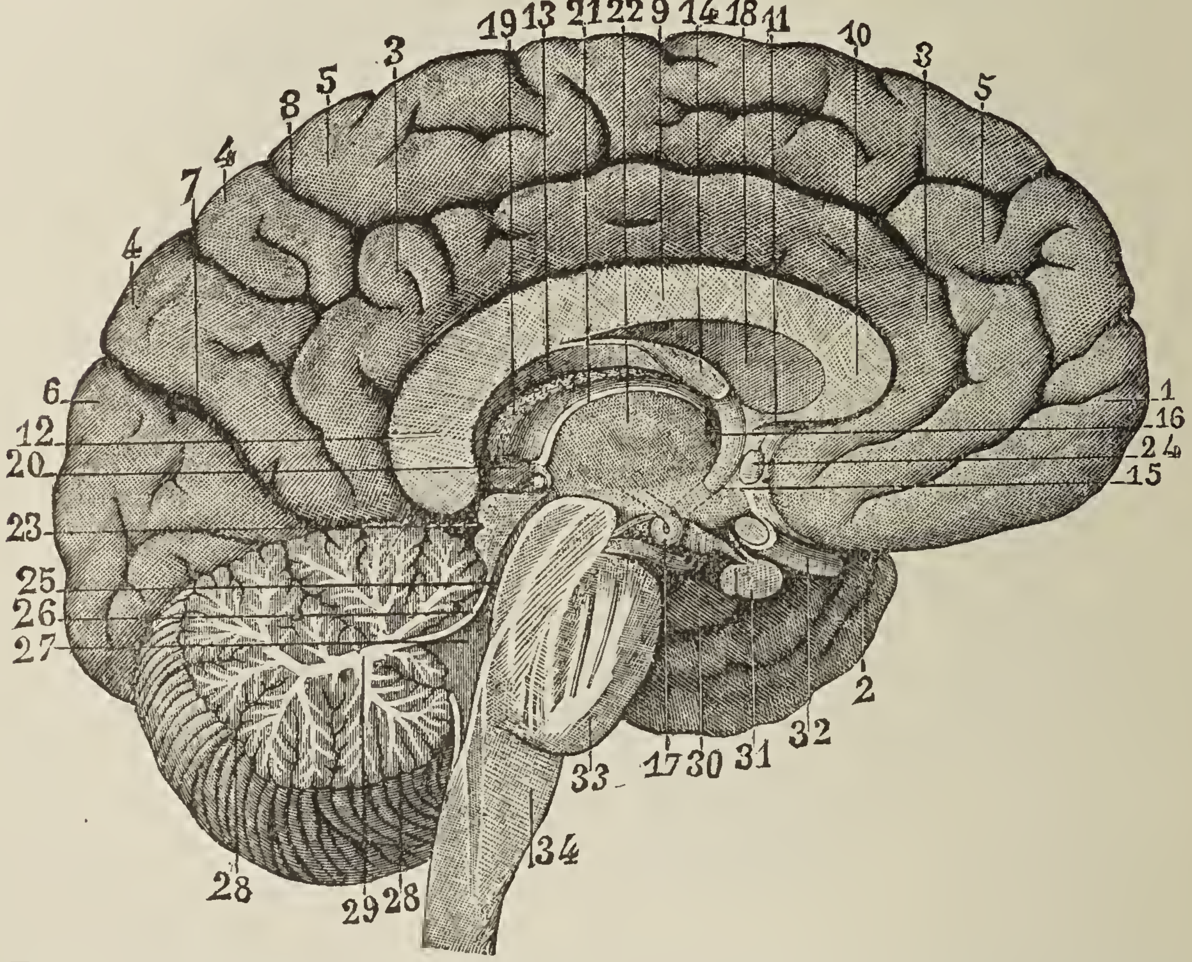

Fig. 5.—Convolutions on the Internal Aspect of the Hemispheres. (Sappey.)

1, frontal lobe; 2, sphenoidal lobe; 3, 3, convolution of the corpus callosum; 4, 4, convolutions forming the middle group of the internal surface; 5, 5, convolutions of the anterior group; 6, convolutions of the posterior group; 7, sulcus separating the middle from the posterior group; 8, sulcus separating the anterior and the middle groups; 9, section of the corpus callosum; 10, genu of the corpus callosum; 11, rostrum of the corpus callosum; 12, posterior extremity of the corpus callosum; 13, fornix; 14, section of the fornix; 15, left anterior crus of the fornix, passing into the internal wall of the optic thalamus, to reach the corresponding corpus albicans: course indicated by a dotted line; 16, foramen of Monro; 17, corpus albicans, in which the anterior crus of the fornix bends upon itself, in the form of a figure of eight, to be lost in the substance of the optic thalamus; 18, septum lucidum; 19, section of the choroid plexus; 20, pineal gland; 21, left superior peduncle of the same; 22, section of the gray commissure of the third ventricle; 23, tubercula quadrigemina, above which are seen the pineal gland with its inferior peduncle and the posterior commissure; 24, section of the anterior commissure; 25, aqueduct of Sylvius; 26, section of the valve of Vieussens; 27, fourth ventricle; 28, 28, section of the middle lobe of the cerebellum; 29, arbor vitæ; 30, corpus cinereum; 31, pituitary body; 32, optic nerve; 33, pons Varolii; 34, medulla oblongata.

The *cerebrum* fills the anterior and the middle fossæ of the skull, and that portion of the occipital region which lies above the tentorium cerebelli, since that membrane supports its posterior part. Its gray matter is not alone confined to its exterior surface, where it covers all of the convolutions and the sulci between them, but it is also present as two distinct collections, in the region of the floor of the brain, called the *corpora striata*,* and the *optic thalami*. To these latter collections of gray matter the term "*basal ganglia*" is applied, on account of their relative situation within the substance of the cerebrum. . . .

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* This ganglion, in each hemisphere, consists of two portions, called the "caudate nucleus" and the "lenticular nucleus," which are separated from each other by the so-called "internal capsule" of the cerebrum. These subdivisions are shown in Fig. 3.

The gray matter which covers the exterior portion of each hemisphere of the cerebrum is connected with white nerve fibers, which may be divided into two classes; the first of which can be traced from the various parts of the exterior of the cerebrum toward the basal ganglia, while the second comprise certain curved commissural fibers, which pass into the white substance for a certain depth, and then return to the gray matter of the surface, thus serving to connect different convolutions with each other. The first set mentioned are called "*converging fibers*," since all the different points upon the large expanse of surface of the cerebrum send fibers which pass through either the corpus striatum or the optic thalamus of the same side,* and they thus present a converging appearance, on an appropriate section of the brain being made. We know, from clinical facts associated with cases of cerebral hæmorrhage and cerebral softening, that the cerebrum must receive, by means of certain of these converging fibers, sensory impressions from other parts, as the normal perception of external objects is sometimes destroyed; while we also know that, in the same type of cases, motor impulses are often destroyed, thus proving that motor fibers are also included among those which pass through the internal capsule or the basal ganglia. I think it can be, therefore, safely stated that the association between the gray matter of the cerebrum and both the motor and sensory nerve fibers is considered as proven, although some doubt may still exist as to the precise course of these fibers.

FUNCTIONS OF THE CEREBRUM.—At the present day we are in possession of a sufficient number of facts, derived from clinical observation, pathological research, and experimental investigation, to render it certain that no intelligence can exist without brain substance; that the destruction of brain substance impairs intellectual power; and that the normal use of the brain implies a degeneration of its substance and a constant process of regeneration, as in all tissues.

It was formerly supposed that the cerebrum was destitute of both sensation and irritability, since experiments seemed to show that no pain was experienced on removal of portions of the hemispheres, and no convulsive movements were produced by direct stimulation of either the white or gray matter. It has therefore been claimed that the hemispheres could be called into action only in response to a sensory impression transmitted to their cells through sensory nerves, and that they were incapable of transmitting or appreciating artificial forms of stimulation. In 1870, however, Fritsch[*] and Hitzig[†] discovered that certain parts of the gray matter of the hemispheres of the brain of a dog responded to a weak galvanic current, and these investigators were thus enabled to locate centers, where certain well-defined movements could be produced at will. They found (1) that the *centers of motion* were always confined to the *anterior parts* of the hemisphere; (2), that the action on muscles was a *crossed action*,[‡] i. e., on the side opposite to the stimulation; and (3), that after severe hæmorrhage the excitability of the gray matter disappeared, thus possibly account-

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* This statement is only approximately correct, since the internal capsule is probably the chief path for these fibers. To what extent the basal ganglia are directly associated with the fibers of the cortex is, as yet, an unsolved problem.

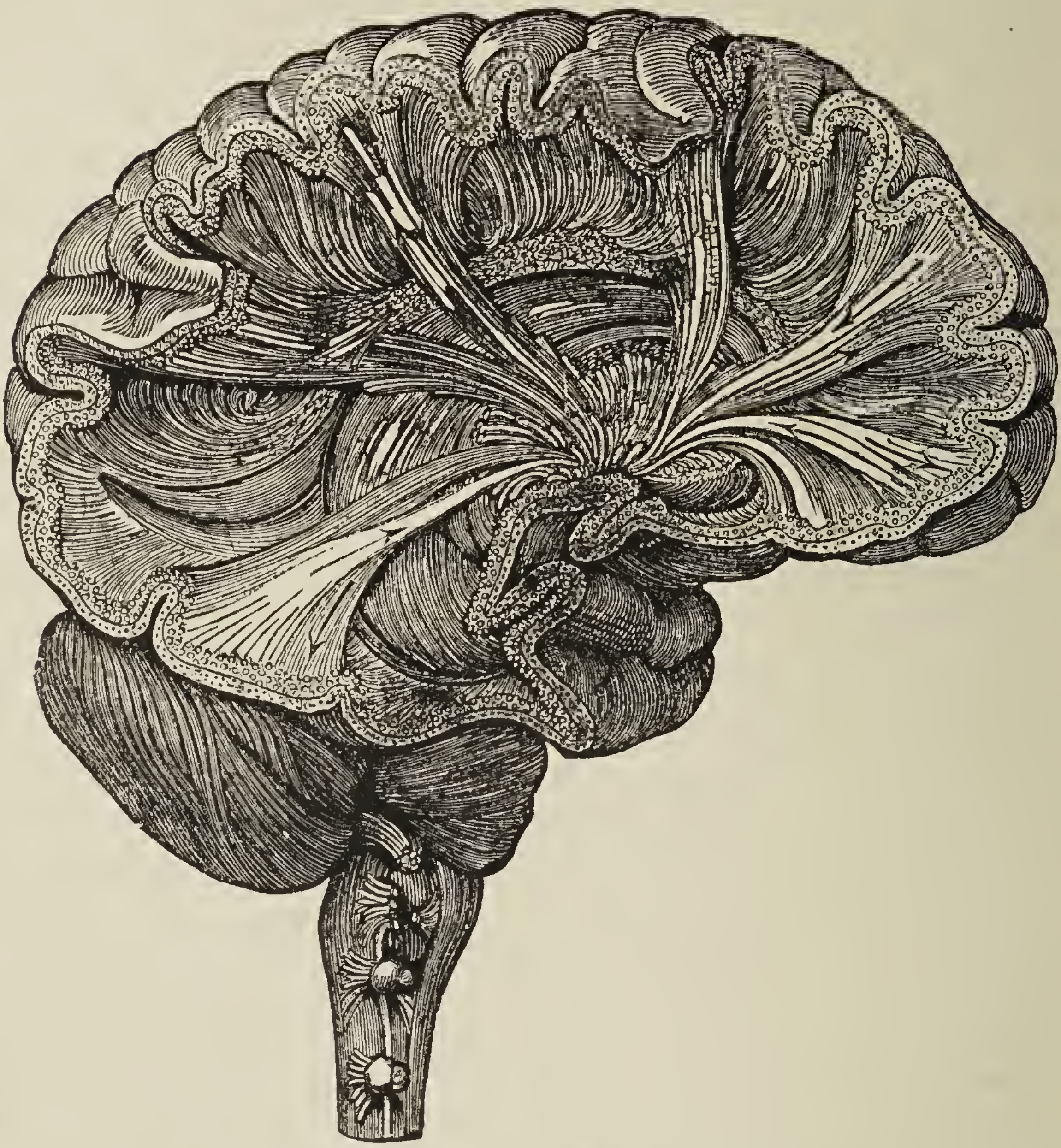

FIG. 6.—DIAGRAMMATIC REPRESENTATION OF THE FIBERS IN THE CEREBRUM. (Le Bon.)

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[*] Reichardt u. du Bois-Raymond's "Archiv," 1870.

[†] Hitzig, "Das Gehirn," 1874.

[‡] Brown-Séquard has shown that, in exceptional cases, this law may be not sustained by clinical facts ("Lancet," 1876). The anatomical researches of Flechsig, however, tend to explain the exceptions to the general rule.

ing for the negative results of previous experimenters in the same line.

The *centers of motion* discovered by these experiments seemed to be connected with parts which were widely separated, and arranged with little apparent system; thus, the muscles of the neck were found to respond to galvanization of a center in the middle of the frontal convolution, while the center adjoining it caused a response in the extensor and abductor muscles of the fore-leg, and others in movements of the eye and face. Ferrier[*] has of late repeated and confirmed the experiments of these German investigators.[†]

The effects of removal of the cerebral hemispheres of animals have been studied largely upon birds and the monkey tribe, and with results which are comparatively uniform. Without entering into detail as to all the effects which follow such a procedure, in case the basal ganglia are left intact, the general result may be given as follows: The animal seems to be able to execute all the movements natural to it, even when complex coördination of movement is required; but the *intelligence* seems to be impaired, and some unusual stimulus must be present to prompt any attempts at motion. As a result of this conclusion, the *mechanism of coördination* of movement is evidently not situated in the cerebral hemispheres.

Flourens,[‡] from a series of experiments made in 1822 and 1823, concluded that the removal of the cerebrum entailed an entire loss of will power and also of the perceptive faculty, and that the memory was utterly destroyed. Bouillaud,[‖] in 1826, proved the error of Flourens as regards the perceptive faculties, as *sight* and *hearing* were shown to be unaffected; and these results were still further made manifest by the researches of Longet,[§] who proved also that *taste* remained.

A careful study of the phenomena which accompany certain pathological lesions of the brain in the human subject, such as laceration or pressure from the effusion of blood, softening of the cerebral substance, etc., if taken in connection with the results of experiments upon living animals, throws considerable light upon the functions of certain distinct portions of the encephalon.

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[*] "West Riding Reports," 1873; "Functions of the Brain," 1876.

[†] A large number of *distinct centers of motion* are mapped out by this author on a diagrammatic chart.

[‡] "Recherches expérimentales sur les propriétés et les fonctions du système nerveux," Paris, 1842.

[‖] "Recherches expérimentales sur les fonctions du cerveau."

[§] "Anatomie et physiologie du système nerveux," Paris, 1842.

Hæmorrhage within the brain substance most commonly affects the *corpus striatum* or the *optic thalamus;* and it is now considered probable that, when the former ganglion is pressed upon, paralysis of *motion* limited to the side of the body opposite to the lesion is present, while, if the latter ganglion is pressed upon or destroyed, the *sensation* of the side of the body opposite to the lesion is proportionally impaired.* These facts illustrate the general course of both the motor and sensory fibers through the cerebrum, and their relation to the basal ganglia or the internal capsule.

In those exceptional cases of hæmorrhage where the white or the gray substance of the cerebral hemispheres is alone involved, without any pressure being exerted upon the basal ganglia or the internal capsule, *no paralysis* of either motion or sensation is usually produced, although a certain amount of weakness may often be perceived in the muscles of the side of the body opposite to the seat of the hæmorrhage.

Softening of the cerebral hemispheres, and the degenerative changes which often follow an extravasation of blood into their substance, are generally indicated by alterations in the intellectual condition of the patient, thus confirming the physiological experiments upon the hemispheres. Among the many forms in which this impairment of intellect may be manifested are recognized an impairment of memory; a tardy, inaccurate, and feeble connection of ideas; an irritability of temper, with a childish susceptibility to petty or imaginary annoyances; easily excited emotional manifestations; and a variety of phenomena denoting abnormally feeble intellectual power.†

Hughlings-Jackson ‡ has shown that there is clear evidence to prove that disease of the gray matter of the convolutions of the hemispheres of the cerebrum may produce not only *delirium*, as in meningitis, but sometimes *convulsions*, either of an epileptiform character or confined to particular groups of muscles.

Landois § and Hitzig ‖ both announced the fact that, when the motor areas upon the convex surface of the cerebrum, which control the movements of the extremities, were excised, a *rise in the temperature* of the corresponding limbs took place and lasted for some months. A relationship has, moreover, been observed between the brain cortex and the beat of the heart (Balogh *); an alteration in the arterial pressure (Bochefontaine †); contraction of the bladder, spleen, and uterus; an increase in the flow of the saliva; and a dilating effect upon the pupil. The exact localization of some of these latter centers can not, as yet, be considered as positive.

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* This effect on sensation and motion is explained by some authors as the result of pressure upon the fibers of the *internal capsule*, and not upon the fibers of the basal ganglia.

† A. Flint, Jr., *op. cit.*

‡ "London Hosp. Reports," 1864; "Clin. and Phys. Researches," 1873.

§ Virchow's "Archiv," 1876.

‖ As quoted by Foster.

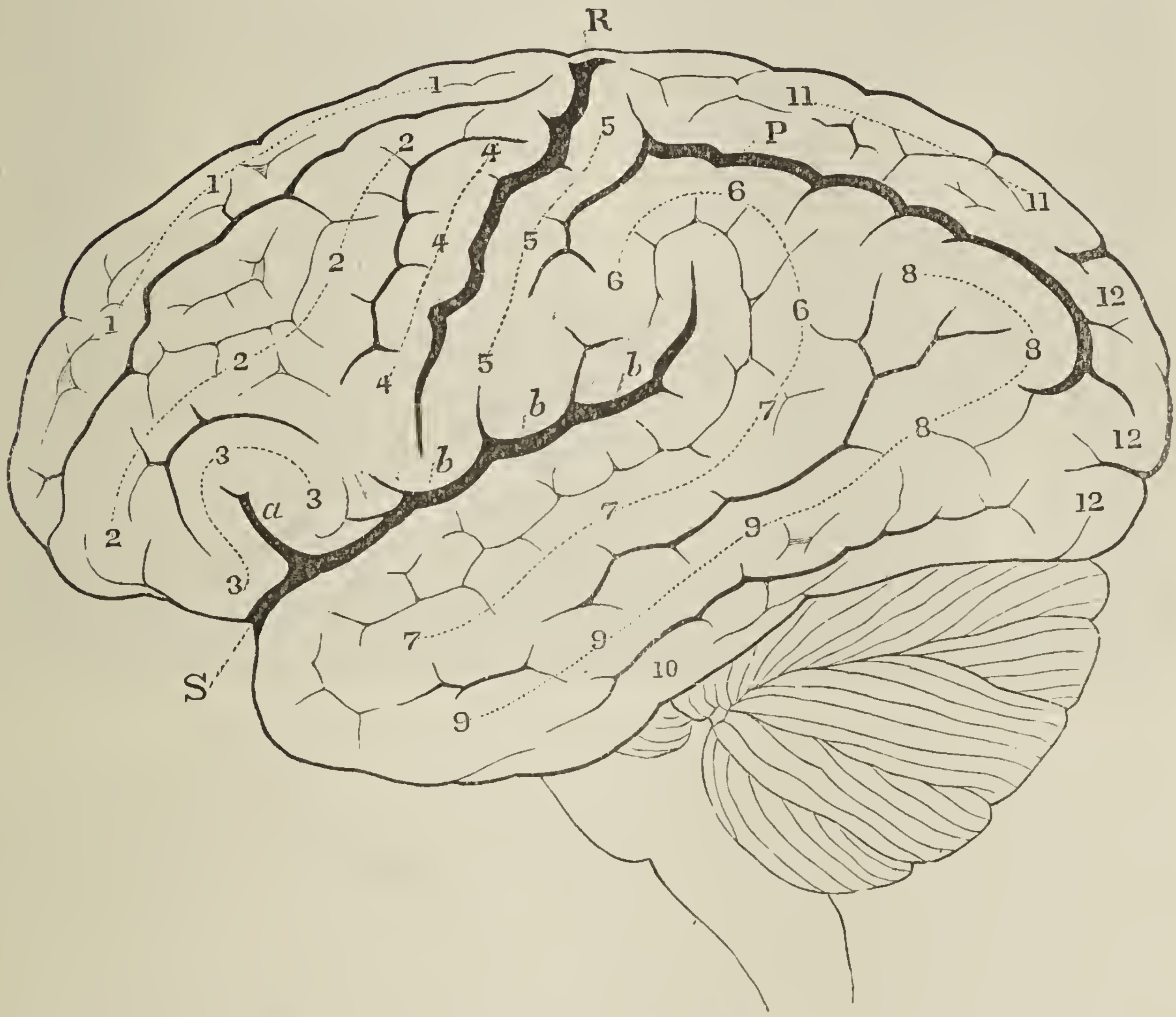

FIG. 7.—A DIAGRAMMATIC FIGURE, SHOWING THE CEREBRAL CONVOLUTIONS. (Dalton.) S, Fissure of Sylvius, with its two branches *a* and *b*, *b*, *b*; R, fissure of Rolando; P, parieto-occipital fissure; 1, 1, 1, the first or superior frontal convolution; 2, 2, 2, 2, the second or middle frontal convolution; 3, 3, 3, the third frontal convolution, curving around the ascending limb of the fissure of Sylvius (*center of speech*); 4, 4, 4, ascending frontal (anterior central) convolution; 5, 5, 5, ascending parietal (posterior central) convolution; 6, 6, 6, supra-Sylvian convolution (parietal lobule), which is continuous with 7, 7, 7, the first or superior temporal convolution; 8, 8, 8, the angular convolution (or gyrus), the probable *center of vision*, which becomes continuous with 9, 9, 9, the middle temporal convolution; 10, the third or inferior temporal convolution; 11, 11, the superior parietal (supra-marginal) convolution; 12, 12, 12, the superior, middle, and inferior occipital convolutions (called also the first, second, and third). It is to be remembered that the term "gyrus" is synonymous with "convolution," and that both terms are often interchanged. This cut may well be compared with that of Ferrier, which appears in the general summary of the clinical points of the brain.

Stimulation of the cerebral surface has been observed by Nothnagel ‡ to result in a well-marked *hæmorrhage of the lungs*.

Ferrier § describes a "*visual*" center, the destruction of which creates blindness of the opposite eye; an "*auditory*" center; a "*tactile*" center; centers for *smell* and *taste*; and even a center for the *sensation of hunger*.

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* Hofmann u. Schwalbe's "Bericht," 1876.

† "Archives de Physiol.," 1876.

‡ "Centralbl. f. d. med. Wiss.," 1874.

§ *Op. cit.*

The center of *articulate speech* * is perhaps one of the most definitely settled points in cerebral localization; and this is all the more interesting, since this is the only sharply defined faculty which has, as yet, been definitely localized. There are two forms of aphasia, which are clinically recognized, viz., the *amnesic* and the *ataxic* varieties. In the former, the *memory of words* is utterly lost, so that the patient is not only unable to express his ideas in articulate sounds, but he is also unable to write them, thus showing that the words themselves have been forgotten. In the ataxic variety, however, the memory of words still remains, but the ability to so *coördinate the muscles of articulation* as to pronounce the words is impaired, so that the person thus afflicted can write his ideas intelligently, but can not utter them. In either of these conditions, the disease which causes it must affect the center of the muscles of articulate speech or the center of articulate speech itself. It is not to be confounded, however, with other conditions where the

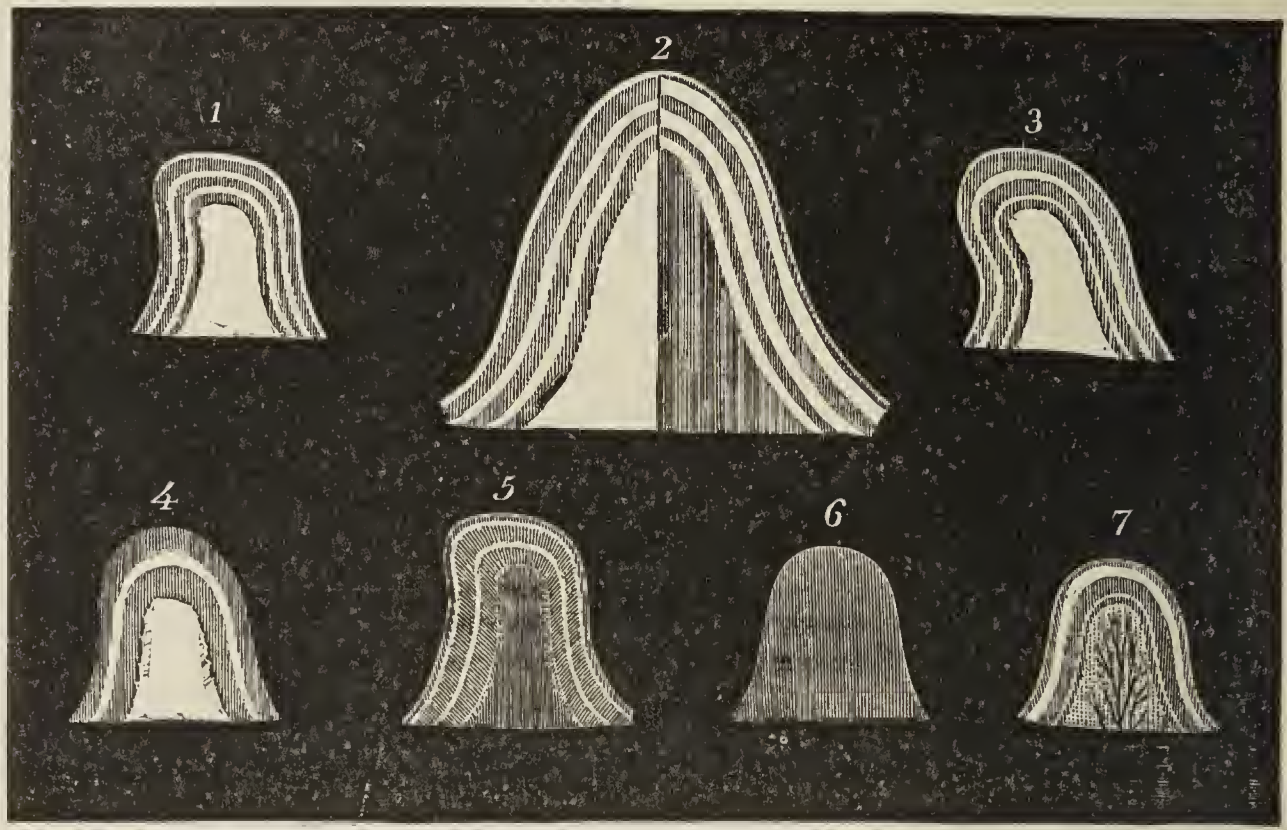

FIG. 8.—STRUCTURE OF THE CONVOLUTIONS. (Baillarger.)

1, the six alternate gray and white layers in the cortical substance of the convolutions ; 2, enlarged section of a convolution. The left half is seen by reflected light. Layers arranged as in the preceding figure. In the right half, seen by transmitted light, the medullary layers are rendered dark by their opacity; the layers of gray substance, on the other hand, which are translucent, are represented in white ; 3, section of a convolution showing the unequal thickness of the white layers. At first sight only three layers can be distinguished, two gray and an intervening white layer. More attentive examination shows six layers; the superficial and deep white layers being, however, very narrow; 4, section of a convolution showing the three layers of gray matter observed by Vicq d'Azyr in the occipital lobe; 5, tendency to radiation shown by the white fibers in the gray matter of the convolutions; 6, section of a cerebral convolution in a newly born infant, seen by reflected light. It presents a homogeneous appearance; 7, same section seen by transmitted light. Presents the same stratification and tendency to radiation which are observed in the adult.

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* See (3) in Dalton's diagram, on a preceding page.

ability to talk is apparently absent, such as occurs in the insane (who often refuse to converse from mere obstinacy), in those types of paralysis which affect the entire muscular mechanism associated with articulation, in hysteria, chorea, and other nervous affections, and in the aphonia of laryngeal inflammation or paralysis.

The credit of the great discovery that the center of articulate speech could be localized in the *third convolution* of the *left anterior lobe* of the cerebrum is generally awarded to Broca,* although, some twenty-five years before he made the profession alive to the investigation of the subject, the same impairment or loss of speech was shown, by Bouillaud and Marc Dax, † to be a frequent accompaniment of hemiplegia of the right side of the body; and in 1863, or thereabout, the views of Broca and of Hughlings-Jackson ‡ were given to the profession, in which they both limited the lesion of aphasia to the parts supplied by the left middle cerebral artery. In 1863, the investigations also of the son of Marc Dax § located the lesion somewhere in the anterior or middle portion of the *frontal lobe* of the left side, and the results of still more recent investigations upon the subject seem to point to the "island of Reil" as the most frequent seat of this peculiar type of paralysis.

Viewing the fact that articulate speech is a thing learned by use, it has been suggested that, in most persons, one side of the brain only has been educated for that purpose; that we are, in fact, *left-brained* in respect to speech in the same way that we are right-handed in respect to many bodily movements. ‖ In support of this theory the pathological fact is adduced that, in most people, the left hemisphere of the cerebrum is larger and more convoluted than the right.

While it is demonstrated that the cerebral lesion in aphasia involves, in the great majority of cases, the left side, still there have been several cases recorded where the right side has been shown to have been the seat of disease. ¶ Such discoveries tend to cast a doubt upon the left side being more closely connected with the power of articulate speech than the right side, and some anatomists have endeavored to explain the frequency of the lesion upon the left side of the brain as a result of the fact that emboli (which are the most frequent cause of the disturbance to those parts supplied by the middle cerebral artery) find a much more *direct course upward* upon the left side than upon the right, in consequence of the angle at which the innominate artery leaves the arch of the aorta, which favors the passage of an embolus *by* rather than *into* its mouth; while the left carotid artery is situated at the highest part of the arch, and its mouth is so directed as to arrest rather than avoid any floating particles in the blood current. In case of such movable particles being arrested by either the innominate or left carotid artery, the most direct course in both instances will be toward the middle cerebral arteries, and thus aphasia will generally be produced with hemiplegia upon the side opposite to that where the embolus may be found.

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* Broca, "Bul. de la Soc. Anat.," 1861.

† A paper read before the Medical Congress at Montpellier in 1836.

‡ Hughlings-Jackson, "Clinical and Physiological Researches on the Nervous System."

§ M. G. Dax, as quoted by Dodds and A. Flint, Jr.

‖ Mich. Foster, *op. cit.;* Ferrier, "Functions of the Brain."

¶ Boyd, Broadbent, Bateman, Meissner, Bertin, Seguin.

The Frontal Lobes.—There are innumerable cases on record where the frontal lobes of the cerebrum have suffered frightful lacerations and loss of substance, and yet recovery has taken place; and where disease of an extensive character has also produced negative results, as regards both motion and sensation. A crowbar has been shot through the head, and recovery has followed.* Again, Bouillaud † reports the passage of a bullet through the frontal lobes with a like result, and with no effect upon sensation or motion. Cases somewhat similar are recorded by Trousseau, ‡ Congreve, Selwyn, § Pitres, ‖ Morgagni, Marot, ¶ Tavignot, and others, all of which go to prove the possibility of the most serious injury to this portion of the cerebrum without symptoms indicative of its presence. On the other hand, numerous cases of hæmorrhage and of abscess within the frontal lobes, as reported by Andral,** Hertz, Reed, Begbie, and others (quoted by Charcot and Ferrier), show the same *absence of positive diagnostic symptoms* either in sensory or in motor paralysis.

From such sources of clinical reasoning, as well as from the physiological deductions which experiments upon animals have taught, the following conclusion of Ferrier †† is of value: "With such evidence before us, we can not regard cases, in which, with lesions of the præfrontal lobes, sensation or motion has been affected, as other than *cases of coexistence* or of *multiple lesions*, whether organic or functional."

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* Bigelow, "Am. Jour. of the Med. Sci.," July, 1850; Harlow, "Recovery from the Passage of an Iron Bar through the Head," "Report of Mass. Med. Soc.," Boston, 1869.

† *Op. cit.*

‡ Quoted by Peter and Ferrier.

§ "Lancet," 1838.

‖ "Lésions du Centre Ovale," 1877.

¶ "Prog. Méd.," February and June, 1876.

** "Clinique Médicale."

†† "Localization of Cerebral Disease," New York, 1880.

THE MOTOR REGIONS OF THE CEREBRUM.*

It may now be positively stated that the bases of the *three frontal convolutions*, the convolutions which bound the fissure of Rolando, and the *para-central lobule*, upon the internal surface of each hemisphere of the cerebrum, are distinctly *motor* in their function. The distribution of the middle cerebral artery to this region gives to that vessel an importance not before appreciated; since it is now known that the four or five branches which are given off from the main artery each nourish a separate area of brain substance, and that emboli may obstruct either the trunk or some of its individual branches. It is thus possible to explain how the basal

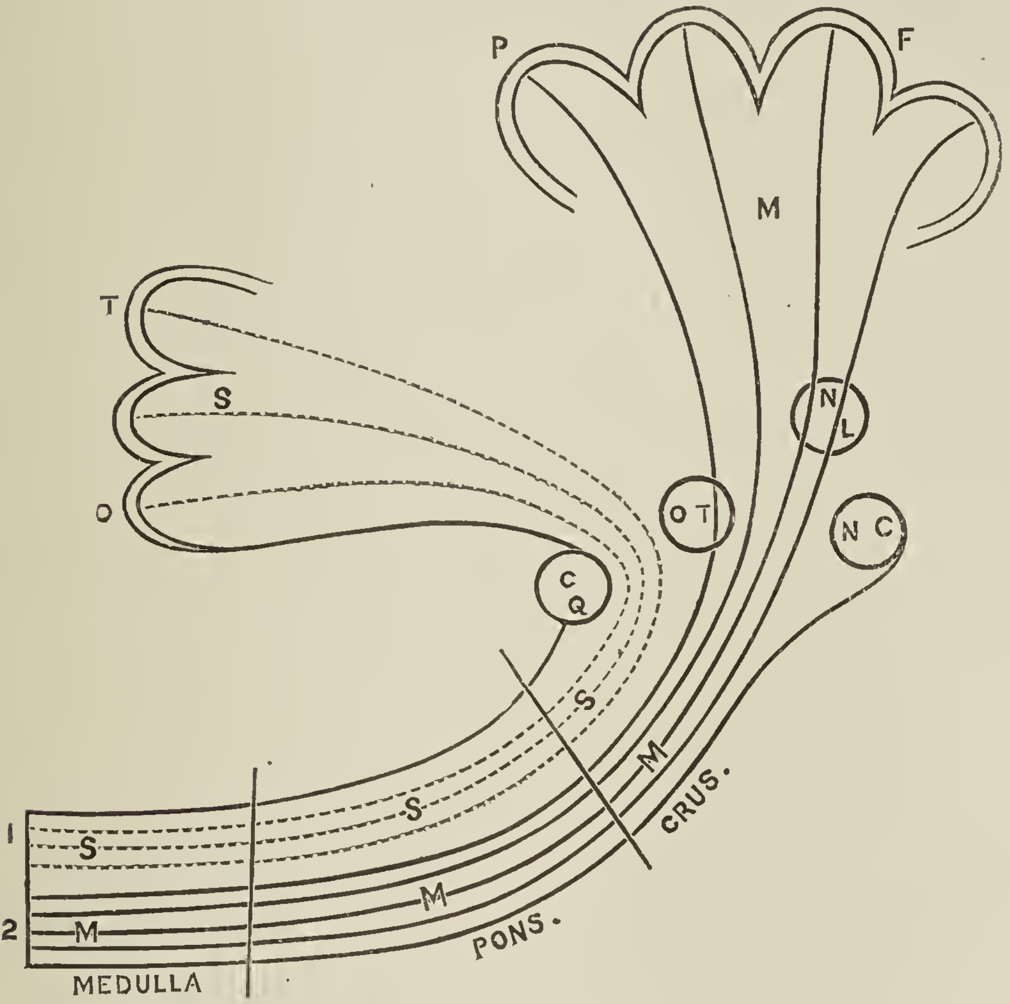

Fig. 9.—Diagram of the Course of Sensory and Motor Tracts in the Mesocephalon and Hemispheres. (Seguin.)

S, sensory tract in posterior region of mesocephalon, extending to O and T, occipital and temporal lobes of hemispheres; M, motor tract in basis cruris, extending to P and F, parietal and (part of) frontal lobes of hemispheres; C, Q, corpus quadrigeminum; O, T, optic thalamus; N, L, nucleus lenticularis; N, C, nucleus caudatus; 1, the fibers forming the "tegmentum cruris" (Meynert); 2, the fibers forming the "basis cruris" (Meynert).

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* Microscopic anatomy shows that the so-called motor gyri are rich in large cells; that they alone contain the "giant cells" of Betz, viz., ganglion cells, which in size and number of processes bear a remarkable resemblance to the unquestionably motor ganglion cells of the anterior horns of the spinal cord and the medulla oblongata. In the motor convolutions these giant cells are found in little clusters of three, five, or more, in a section, imbedded among the large ganglion cells of the third layer. In two late articles, by G. M. Hammond ("Medical Record"), this statement has been called in question (if the motor gyri are confined exclusively to the limits previously given).

ganglia may still perform their functions, while other parts supplied by some of the cortical branches may be impaired.

The preponderance of clinical testimony goes to show that most of the destructive lesions which are associated during life with paralysis of voluntary motion are confined to this motor area, although a rare case is on record * in which the motor area was the seat of cystic disease, and still voluntary motion remained unaffected. It is a matter of great doubt whether the gray matter of the convolutions was impaired, even in this case, in spite of the existing lesion.

The effect of extensive lesions affecting the motor area of the monkey (which is commonly used for experiments, as the nearest approach to the type of mankind) may be summarized as follows: 1. A hemiplegia, which is at first absolute; 2. An improvement in associate, alternating, or bilateral movements, but no improvement in voluntary motion. Respecting this point, I quote from a late work as follows: "As examples of the improvement which follows the onset of the hemiplegia, the hand becomes more paralyzed than the arm, the arm more than the leg, and the lower facial movements more than the upper; while the muscles of the trunk are scarcely, if at all, affected." †

In man the hemiplegia is always on the side opposite to the existing lesion, if the motor area, the corpus striatum, or the anterior part of the internal capsule be the seat of disease; and this paralysis is often accompanied by *convulsive muscular movements* or *rigidity* of the paralyzed parts, in its early stage, and, later on, by *rigidity* and *motor sclerosis.*

The researches of Pitres ‡ have shown that the same results as those dependent upon a lesion of the gray matter of the convolutions within the motor area, follow when the lesion affects the *white substance* of the brain § which intervenes between the gray matter covering the motor area and the basal ganglia beneath them, and he thus urges a system of nomenclature of the different portions of the "centrum ovale" by means of sections of the brain made in certain regions so as to show special parts.

It is by means of these researches that we are enabled to explain those cases in which rigidity or muscular spasms accompany an attack of hemiplegia, from an *effusion* into the *lateral ventricles* of the brain; and in which *cerebral softening* or *hæmorrhage*, which does not affect the gray matter of the convolutions or the basal ganglia, produces a permanent paralysis of the side of the body opposite to the lesion.

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* Samt, "Archiv für Psychiatrie," 1874.

† Ferrier, "Localization of Cerebral Disease."

‡ "Lésions du Centre Ovale," Paris, 1877.

§ This portion contains the fibers of the internal capsule radiating to reach the motor regions of the cortex.

When sudden hemiplegia occurs, as a result of hæmorrhage into or traumatism of some portion of the motor area, the condition of paralysis is liable to improve in those regions of the body where the *special motor center of that part* remains unimpaired, but the paralysis will usually remain permanent in that part of the body whose motor center is destroyed. This fact, when properly interpreted, may often prove a most valuable guide in diagnosis.

Special Centers of Motion.—At the base of the *first frontal convolution*, and extending slightly into the *second frontal convolution*, in the brain of a monkey may be located a distinct center which exerts a special influence upon the head and eyes. Thus, to quote from Ferrier, whose researches have been remarkable for their originality and apparent accuracy, stimulation of this center causes "*elevation of the eyelids*, *dilatation of the pupils*, *conjugate deviation of the eyes*, and *turning of the head toward the opposite side*."

That this same center seems to exist in the human brain is to be inferred from the cases where a *bilateral deviation of the eyes* has been observed, which, in some cases, has also been associated with a lateral deflection of the head. This subject has excited the interest of Hughlings-Jackson,* Priestley Smith,† Ferrier, ‡ and Charcot, § and cases which seem to sustain the theory of an oculo-motor function in the frontal convolutions have been reported by Chouppe, Landouzy, ‖ Carroll, Smith, and others. An effort has been made to explain these ocular symptoms by some association with the angular gyrus, but apparently without much ground.

The center of *motion for the muscles of the limbs* is not yet as positively ascertained as the oculo-motor center, although some interesting experiments have been made to decide whether the corresponding point of the brain of man is analogous, in its control over the leg, to that of the monkey tribe. As an example of the ingenuity shown in research, Bourdon ¶ has endeavored to demonstrate *atrophy of certain parts* of the brain after amputation of the limbs, and thus indirectly to prove the normal use of the parts which had atrophied from disuse. The use to which the monkey puts his tail, since it serves the purpose of an additional hand in some instances, renders the application of movements of that organ to those of man a matter of apparent difficulty, and the center of motion for the tail of the monkey can hardly be applied to the brain of man without bringing comparative anatomy into prominence.

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* "Ophthalmology in its Relations to General Medicine," "Lancet," 1877.

† "Bilateral Deviations of the Eyes," "Birmingham Med. Review," 1875.

‡ *Op. cit.*

§ *Op. cit.*

‖ "Blépharoptose Cérébrale," "Arch. Gén. de Méd.," 1877.

¶ "Recherches Cliniques sur les Centres Moteurs," Paris, 1877.

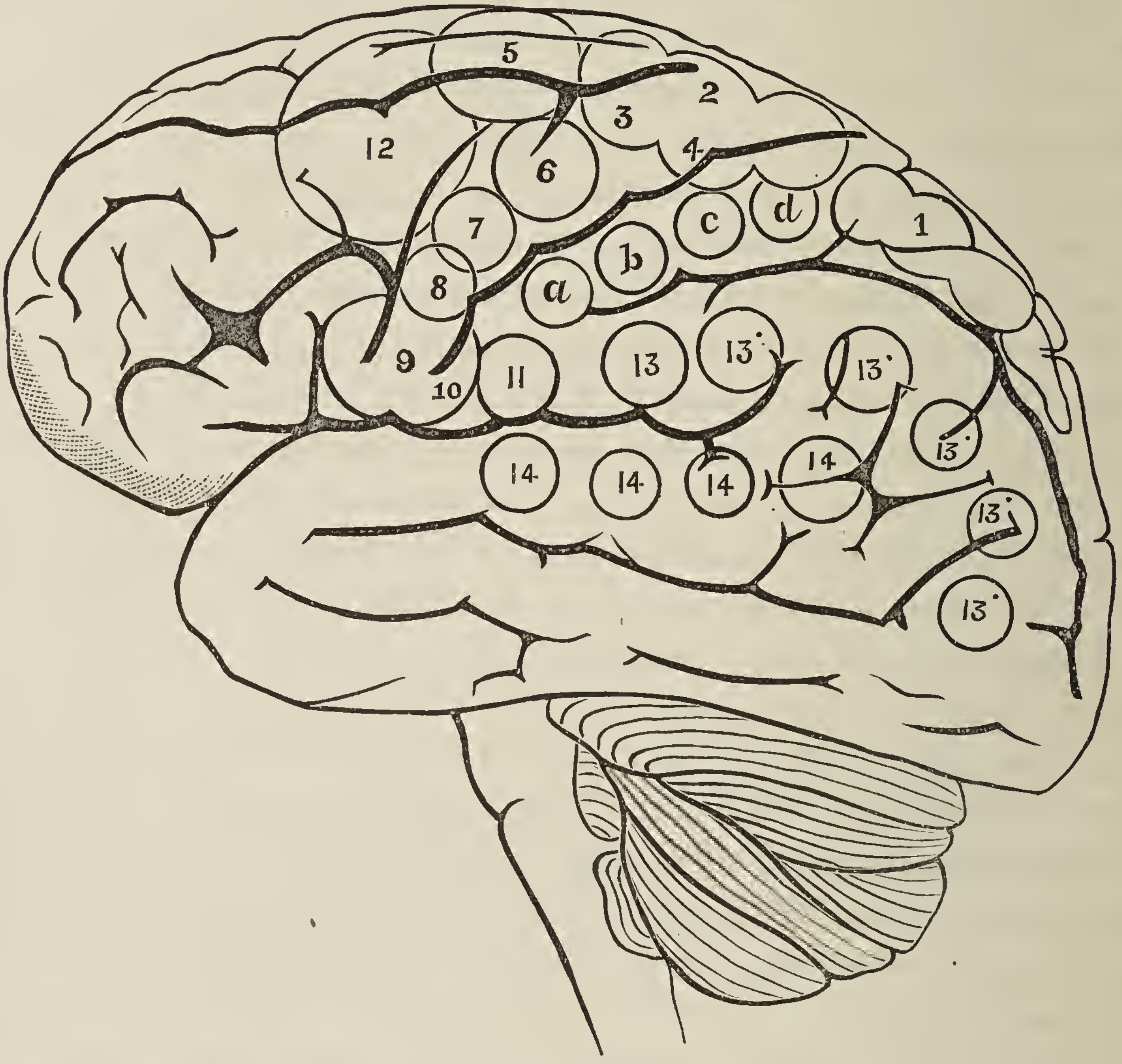

FIG. 10.—SIDE VIEW OF THE BRAIN OF MAN AND THE AREAS OF THE CEREBRAL CONVOLUTIONS. (Ferrier.)

(on the postero-parietal [superior parietal] lobule), advance of the opposite hind-limb as in walking; 2, 3, 4 (around the upper extremity of the fissure of Rolando), complex movements of the opposite leg and arm, and of the trunk, as in swimming; *a*, *b*, *c*, *d* (on the postero-parietal [posterior central] convolution), individual and combined movements of the fingers and wrist of the opposite hand: prehensile movements; 5 (at the posterior extremity of the superior frontal convolution), extension forward of the opposite arm and hand; 6 (on the upper part of the antero-parietal or ascending frontal [anterior central] convolution), supination and flexion of the opposite forearm; 7 (on the median portion of the same convolution), retraction and elevation of the opposite angle of the mouth by means of the zygomatic muscles; 8 (lower down on the same convolution), elevation of the ala nasi and upper lip with depression of the lower lip, on the opposite side; 9, 10 (at the inferior extremity of the same convolution, Broca's convolution), opening of the mouth with 9, protrusion, and 10, retraction of the tongue —region of aphasia, bilateral action; 11 (between 10 and the inferior extremity of the postero-parietal convolution), retraction of the opposite angle of the mouth, the head turned slightly to one side; 12 (on the posterior portions of the superior and middle frontal convolutions), the eyes open widely, the pupils dilate, and the head and eyes turn toward the opposite side; 13, 13 (on the supra-marginal lobule and angular gyrus), the eyes move toward the opposite side with an upward 13, or downward 13· deviation; the pupils generally contracted (center of vision); 14 (of the infra-marginal, or superior [first] temporo-sphenoidal convolution), pricking of the opposite ear, the head and eyes turn to the opposite side, and the pupils dilate largely (center of hearing). Ferrier, moreover, places the centers of taste and smell at the extremity of the temporo-sphenoidal lobe, and that of touch in the gyrus uncinatus and hippocampus major.

Paralysis of the leg, when dependent solely upon cerebral lesions, is seldom separated from a similar condition of the upper extremity, although a few rare cases of that character are on record; but the rule of Lucas-Championnière may be considered as approximately correct, viz., that, to expose the center of motion for the muscles of the leg, it is necessary to trephine over the *upper extremity* of the *fissure of Rolando.*

The centers of motion for the muscles of the *different regions* of the *upper extremity* occupy a much larger space upon the surface of the cerebrum than those of the lower extremity, as might have been expected when we consider the amount of intelligence which the hand exhibits.* Ferrier has pointed out certain motor areas for the various movements of extension, adduction and retraction, supination and flexion, and centers for the actions of the wrist and finger muscles.

The close proximity of those centers which control the *facial* and *oral muscles* to the centers governing the motions of the hand possibly explains why movements of retraction of the mouth occur when the hand is brought into powerful action; and also the fact that paralysis of certain groups of muscles situated in the upper extremity is commonly associated with some form of facial paralysis.

From a careful analysis of cases in which paralysis of the upper extremity was confined to certain sets of muscles, the results seem to point to the *ascending parietal* and the *upper portion* of the *ascending frontal convolutions* of the cerebrum as the probable seat of disease; and lesions of the *ascending parietal* convolution are found, both by experimental research and by pathological deduction, to *affect the hand* in particular. In further support of this statement, the results of the examination of the brains of persons who had suffered amputation of the hand,† or who had been characterized by a congenital absence of that member, ‡ show an atrophy of the part designated by the experiments of Ferrier as the motor center for its movements.

The motor centers of the *facial muscles* occupy a region in close proximity to those of the arm and hand; and it is an exception to the general rule to observe paralysis confined exclusively to the face, since the muscles of some part of the upper extremity are generally affected simultaneously. It may be also noticed, with some degree of practical interest, that *aphasia* is a common associate of either of these types of localized paralysis, since the center of Broca is liable to be also involved from its close relation to the centers of the face, arm, and hand. It is considered by some authorities that the absence of aphasia, in cases in which the muscles of the face, arm, or hand are paralyzed, is probably confined to lesions affecting only the *right side* of the cerebrum.

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* Sir Charles Bell, "The Human Hand."

† Reported by Bourdon, "Centres Moteurs des Membres," Paris, 1877.

‡ Gowers, article in "Brain," 1878.

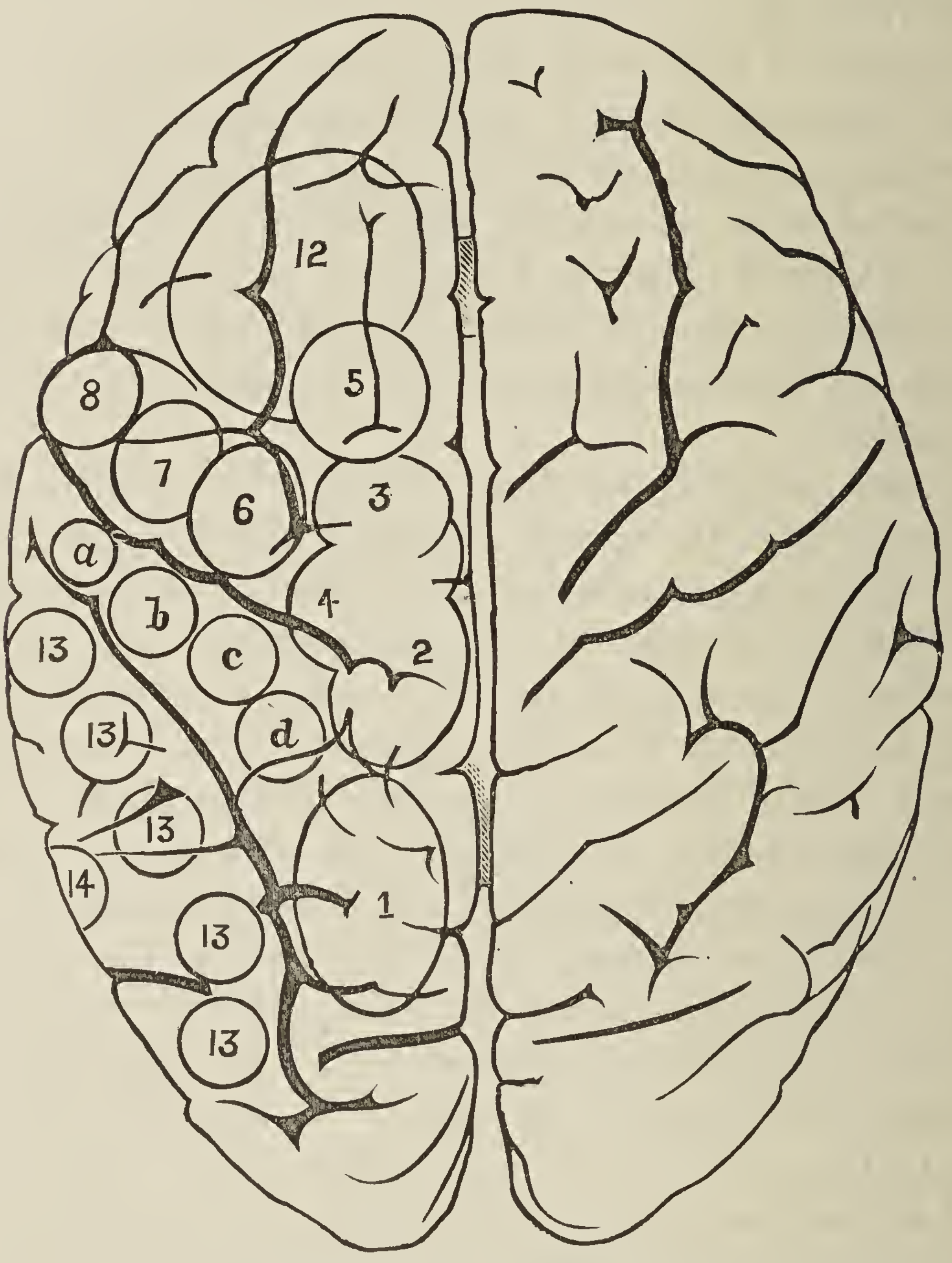

Fig. 11.—Upper View of the Brain of Man and the Situation of Areas of the Cerebral Convolutions. (Ferrier.)

1 (on the postero-parietal [superior parietal] lobule), advance of the opposite hind-limb as in walking; 2, 3, 4 (around the upper extremity of the fissure of Rolando), complex movements of the opposite leg and arm, and of the trunk, as in swimming; *a*, *b*, *c*, *d* (on the postero-parietal [posterior central] convolution), individual and combined movements of the fingers and wrist of the opposite hand; prehensile movements; 5 (at the posterior extremity of the superior frontal convolution), extension forward of the opposite arm and hand; 6 (on the upper part of the antero-parietal or ascending frontal [anterior central] convolution), supination and flexion of the opposite forearm; 7 (on the median portion of the same convolution), retraction and elevation of the opposite angle of the mouth by means of the zygomatic muscles; 8 (lower down on the same convolution), elevation of the ala nasi and upper lip with depression of the lower lip, on the opposite side; 9, 10 (at the inferior extremity of the same convolution, Broca's convolution), opening of the mouth with 9, protrusion, and 10, retraction of the tongue—region of aphasia, bilateral action; 11 (between 10 and the inferior extremity of the postero-parietal convolution), retraction of the opposite angle of the mouth, the head turned slightly to one side; 12 (on the posterior portions of the superior and middle frontal convolutions), the eyes open widely, the pupils dilate, and the head and eyes turn toward the opposite side; 13, 13 (on the supra-marginal lobule and angular gyrus), the eyes move toward the opposite side with an upward 13, or downward 13· deviation—the pupils generally contracted (center of vision); 14 (of the infra-marginal, or superior [first] temporo-sphenoidal convolution), pricking of the opposite ear, the head and eyes turn to the opposite side, and the pupils dilate largely (center of hearing). Ferrier, moreover, places the centers of taste and smell at the extremity of the temporo-sphenoidal lobe, and that of touch in the gyrus uncinatus and hippocampus major.

The fact that all of the clinical observations recorded have failed thus far to overthrow the discovery of Broca seems to place it upon a footing above that of mere empirical generalization. Cases have been reported in which aphasia has been the result of fracture of the left side of the skull in the region of the frontal lobes,* and also in which recovery of the power of speech followed the operation of trephining, † but it occurs most frequently as the result of embolic obstruction of the middle cerebral artery or of some of its branches. ‡

Diagnosis of Cortical Motor Paralysis.—The effects of lesions which involve the *corpus striatum* of either side, or the *anterior two thirds* of the *internal capsule* of the cerebrum, differ but little from those of lesions which are confined to the motor area of the cerebral convolutions, since the fibers which are affected in either case are the same.§

After the effects of the shock of the attack have passed away, the muscles which are paralyzed are usually those which are the most completely under the control of the *volition;* thus, the lower muscles of the face are more affected than those upon the forehead or the eyelids, since the lower facial muscles are by far the most voluntary; the muscles of the hand are very markedly affected, even more than those of the arm; and the muscles of the upper extremity more than those of the lower.‖

No evidence of impairment of *sensation* can be discovered, provided that the posterior third of the internal capsule of the cerebrum has escaped injury. The nutrition of the paralyzed muscles is apparently normal, and their electric contractility is not impaired.

A tendency toward *rigidity* of the paralyzed muscles develops, later on in the disease, which has been variously explained by some authors (Charcot, Bastian, and Bouchard) as the result of a *progressive sclerosis*, which descends along the motor tract of the pons Varolii, crus cerebri, medulla, and the spinal cord; while the researches of Hughlings-Jackson ¶ warrant him in discarding this explanation and attributing it to an unimpeded *cerebellar influence*, which is no longer controlled by the cerebrum. Both of these hypotheses are, however, discarded by Duret, ** who considers the rigidity to be the result of simple *reflex irritation.* It will in no way add to the practicability of the matter contained here to enter into the discussion of the relative demerits of these theories, since those interested in the subject can find Ferrier's work on the "Localization of Cerebral Disease," and many of the advanced works upon the pathology of diseases of the nervous system, to contain all the desired information.

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* Mac Cormac, "Brain," 1879.

† Terillon, "Acad. de Médecine," 1876.

‡ See researches of Meissner, Charcot, Vulpian, Seguin, Bertin, and others.

§ Ferrier, *op. cit.* The reader is referred to Fig. 3 in explanation of this statement.

‖ Pathological anatomy (recent cases) demonstrates (1) that destructive lesions of the motor regions of the cortex (and of the para-central lobule) produce descending degeneration throughout the direct cerebral motor tract, extending into the lateral columns of the spinal cord; and (2) that there is a remarkable correspondence between certain localized spasmodic and paralytic symptoms observed during life and lesions irritating or destroying certain definite spots in the motor zone of the cortex.

¶ "Medical Examiner," April, 1877.

** "Brain," Part I, 1877.

One of the most valuable signs of paralysis dependent upon a lesion of the cortex is the fact that the condition is not one of complete hemiplegia, but rather of *monoplegia*, in which special groups of muscles only are deprived of voluntary motion; thus, the arm and leg may be affected together; again, the arm, hand, and face; the arm alone; the leg alone; certain movements only of either extremity; and all other possible combinations. Paralysis due to lesions of the cortex may often be transitory, if the lesion be slight and superficial; or it may be permanent, if deep and impinging upon the medulla. It is, furthermore, frequently associated with *rigidity* in its *early stages*, which is a rare occurrence in central cerebral disease.

In attacks of paralysis due to suddenly developed lesions of the cortex, *consciousness* is less frequently lost than in similar lesions of the central ganglia, and *pain* of a local character within the head is often either complained of by the patient spontaneously with the attack, or it may sometimes be elicited by percussion over the seat of the exciting lesion. The loss of consciousness which generally accompanies any sudden lesion of the central ganglia is explained by Duret * as due to a *rapid displacement* of the *cerebro-spinal fluid*, which in turn creates a general disturbance of the circulation of the cerebrum, since this fluid serves to establish a uniformity of pressure throughout the brain.

Ferrier † thus briefly summarizes the results of clinical observation bearing upon the diagnosis of paralysis dependent upon destructive lesions of the cortex: "While we can not be quite certain of the position or extent of a cortical lesion causing a sudden and complete hemiplegia, we may take a *monoplegia* of the leg, or of the arm and leg, as an indication of a lesion of the upper extremity of the ascending convolutions close to the longitudinal fissure; *brachial monoplegia*, as a sign of a lesion in the upper part of the ascending frontal convolution, or, if the paralysis *affect the hand* more particularly, of the ascending parietal convolution; *brachio-facial*

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* "Traumatismes Cérébraux," Thèse, 1878; "Archives de Physiologie," 1875.

† *Op. cit.*

monoplegia, as indicating a lesion of the mid-fronto-parietal region; while *facial* and *lingual monoplegia*, or this combined with aphasia, indicates a lesion of the lower part of the ascending frontal convolution where the third frontal joins with it."

Irritative Lesions of the Motor Area.—It is a well-recognized fact in clinical experience that certain symptoms, which are chiefly of a convulsive type, are dependent upon conditions which create simply *irritation* of certain portions of the cerebrum, without any actual destruction of the gray or white matter being present. Among the various conditions which are especially liable to produce such local irritation may be mentioned syphilitic meningo-encephalitis, simple inflammation of the same character, deposit of tubercle, superficial cysts or tumors of a more solid character, spiculæ of bone, cicatrices from wounds of previous date, suppuration from caries and necrosis, etc.

In the year 1867,* and still later, in the year 1871,† the general statement by which the clinical diagnosis of the situation of irritative lesions of the cerebrum might be assisted was advanced by Callender, "that convulsive attacks were most commonly associated with superficial lesions of the cortex situated in the immediate vicinity of the middle meningeal artery." Ferrier, however, concludes, as the result of his extensive facilities for observation, that, while this may be useful as a general rule, still a lesion of *any portion* of the cortex of the hemisphere may result in convulsions of the opposite side of the body; and he adds the statement that the seat of an irritative lesion can be less accurately determined than that of one of a destructive character, owing to the difficulty of determining the extent of the zone in which vital irritation concentrates itself.

Hughlings-Jackson ‡ has contributed much to the pathology of those conditions of the cortex, produced by irritation, which manifest themselves in the form of *convulsions*. So great a prominence did syphilis have as one of the exciting causes of such irritation that the term "Jacksonian epilepsy" is now often used as synonymous with the convulsions met with in that disease. The theory which this author advances to explain these convulsive attacks is as follows: That irritation of the cortex tends toward an abnormal accumulation of nervous energy, so that the affected part is under a state of high tension, and, under certain conditions, this irritated portion discharges itself in a sudden and explosive manner, thus producing a subsequent exhaustion of its powers; hence a convulsion and often some type of monoplegia following.

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* "St. Bartholomew's Hospital Reports." † "Medico-Chir. Trans."

‡ *Op. cit.* Also, see "Medical Times and Gazette," 1875.

The convulsions dependent upon irritation of the cortex may assume all of the different types produced by destructive lesions of the motor area, and may even result in paralysis; thus, the leg alone may be affected with spasm, the arm alone, the arm and hand together, and the face alone, or in connection with the upper extremity.

It may often assist in the localization of a lesion, which is creating the irritation of the cortex, to note carefully the muscles affected at the onset of the convulsion, since they may enable the observer to trace the seat of the region within the cortex which first exhibited a tendency to explosive discharge of its nervous energy.

THE SENSORY REGIONS OF THE CEREBRUM.

The temporo-parietal and occipital lobes of the cerebrum are now accepted by most authors as the only portions which can appreciate the perception of *sensory impressions.* This fact seems to be demonstrated not only by experimental investigation upon animals, but also by clinical observation, with as great a degree of certainty as previous facts which have been mentioned regarding the function of the frontal region and the motor area.

It has been determined, with some approach to positiveness of statement, that the *posterior fibers of the crus* are the principal means of transmission of sensory impressions from the periphery of the body to the cerebrum, and the researches of Meynert have done much to demonstrate that these fibers are connected with the portions of the cortex which have been designated as the regions chiefly associated with sensory perception.

Duret,* Veyssière,† and Raymond have shown by experiment that, when that part of the internal capsule which is situated between the *lenticular nucleus* and the *optic thalamus* is divided, a loss of sensation is experienced in the opposite side of the body, but that, in some instances, some degree of motor paralysis is also produced. On the other hand, these same observers have found that section of the anterior two thirds of the internal capsule produces a distinct motor paralysis, with no effect upon the function of sensory perception of the parts paralyzed, save in a few instances, where such a result of a fleeting character was detected.

That these deductions are fully sustained by clinical facts, as far as the motor nerves are concerned, the statements of preceding pages seem to clearly prove, and the collected cases reported by Charcot,* Pitres,† Türck, ‡ and others, § present a large mass of evidence to warrant the conclusion that lesions of the posterior part of the internal capsule are indicated by hemianæsthesia on the side of the body opposite to the lesion. In such cases, *tactile sensation is destroyed to the median line* not only in the trunk, but also upon the face; pain and the sensation of heat are likewise abolished; but the contractility of muscles under the electric current is not impaired. If we examine the mucous membrane of the eye, nose, or mouth, the same condition of destroyed sensibility will be detected, but the viscera remain sensitive. Furthermore, taste, smell, and hearing are usually rendered deficient, and in some cases are entirely abolished, on the side opposite to the lesion; and the special sense of sight is affected in a variety of ways, which will be described in detail.

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* *Op. cit.*

† "Sur l'Hémianesthésie de Cause Cérébrale," 1874.

In the admirable work of Charcot, ‖ a diagram is given to illustrate the effect of pressure upon the optic tract, the commissure, and the optic nerve itself, but the clinical facts afforded by lesions within the internal capsule fail to support similar results as the effect of intra-cerebral pressure. Thus, in lesions of the internal capsule, blindness of the lateral half of both retinæ (*hemianopsia*), as one would expect to find, does not exist; but, on the contrary, a condition of *amblyopia* results, which is characterized by a marked contraction of the field of vision, and especially so as regards the perception of color. The field for blue tints is the largest, and that for red is next in point of size, while that for green comes last. Now, in lesions of the internal capsule, the perception of these colors is impaired in the relative proportion of the size of the field, and thus vision for green may be entirely lost, while for red or blue it may still remain.

It has been shown by Landolt,¶ who has done much to develop this special field of investigation, that the impairment of vision from intra-cerebral causes is not altogether confined to one side, but that the eye upon the same side as the lesion is somewhat affected, and rendered partially anæsthetic. If we examine the eyes so affected, we can not discover by the ophthalmoscope any organic disease or evidences of degeneration of either the optic nerve or the retina, provided the examination is made early, before any late results of the blind condition of the eye manifest themselves as the effect of disuse.*

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* "Leçons sur les Maladies du Système Nerveux."

† "Lésions du Centre Ovale."

‡ "Sitzungsb. d. kaiserl. Akad. d. Wissensch."

§ See Grasset, "Localizations dans les Maladies Cérébrales," 1878.

‖ *Op. cit.*

¶ "La France Médicale," 1877.

As has been before stated, the condition of amblyopia and the absence of hemianopsia are in opposition to what the effects of pressure upon the optic tracts would seem to suggest, but we still have a clinical fact to explain, viz., that hemianopsia does sometimes occur with attacks of hemiplegia. Ferrier states positively that, in such cases as these, we may conclude that the lesion must either be situated below the cerebral cortex, or exert its influence below the cortex, in case it be contained within it. The angular gyrus, which is now considered as the probable center of vision, does not seem to exert any influence upon the motor apparatus, as is shown by its destruction in animals.

The OCCIPITAL LOBES of the cerebrum have been stated to be properly included among the sensory regions of the cortex. Experiments of section, or even of complete removal of these lobes on one or both sides, however, fail to show any effect upon sensory or motor functions. So negative, indeed, are these results that no disturbance of taste, hearing, touch, smell, or sight has been positively produced. It is from the absence of positive experimental deduction as to these lobes, that the distribution of the decussating fibers of the *optic tracts* to the occipital lobes may be yet considered as questionable, although such an anatomical distribution is stated, by many late authors, to be capable of verification.

Certain clinical facts, however, seem to warrant the belief that the occipital lobes are associated with more apparent *mental derangement* than the frontal or temporo-sphenoidal lobes, in case they be the seat of disease, and the conclusion of Ferrier † is thus stated, as an hypothesis: "The occipital lobes are specially related to the visceral sensibilities, and are the anatomical sub-strata of the correlative feelings which form a large portion of our personality and subjectivity." It is claimed by Hughlings-Jackson that irritative lesions of the occipital lobes give rise to *colored perception* of objects and other ocular spectra, and he further states that such evidences of defective perception are more common when the lesion affects the right side.

The TEMPORO-SPHENOIDAL LOBES are situated between the motor area, in front, and the occipital lobe, behind. The following deductions have been drawn, by experimental research, as to the special functions of this lobe and some of the adjoining convolutions, which will require separate consideration:

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* Any intra-cranial lesion which acts in such a way as to *increase the intra-cranial pressure* may produce (in addition to other symptoms) the condition known as "choked disk," or a neuro-retinitis.

† "Localization of Cerebral Disease."

The apparent connection of this region with the special sense of *vision* has been noticed by Hitzig, Goltz, and McKendrick, the two former of whom confined their experiments to the dog species, while the latter operated exclusively upon pigeons. Ferrier,* however, from a belief that other functions could be demonstrated as pertaining to this locality, and from disbelief in the method pursued by Goltz, † as adapted to the requirements of experimental research concerning the functions of limited areas of the cortex, made a series of experiments upon the brains of monkeys, and claims to have established some new points of physiological interest, and, possibly, of practical value in cerebral localization.

The conclusions which were drawn as the results of the labors of this learned and original investigator may be thus summarized:

(1.) In the *angular gyrus* is situated a center, which causes, on electric irritation, certain *movements of the eyes*, *pupils*, *and head*, but whose destruction creates no evidence of motor paralysis in the muscles of either the eye, its lids, or the pupil. Unilateral destruction of this center, however, causes blindness of the opposite eye, which proves but temporary; while its destruction on *both sides* causes a *permanent loss of sight* in both eyes. It thus appears that the center of either side is, to some extent, connected with both eyes.

(2.) In the *superior temporo-sphenoidal convolution* is found to exist a center which, under galvanic stimulation, creates a twitching of the opposite ear and a *modification in hearing* of the opposite side, but which it was found difficult to fully ascertain on account of the animal not being able to exhibit appreciation of modification of that special sense. As in the preceding center, destruction of this convolution, upon one side, caused some abnormality of hearing; and, when *destroyed on both sides*, the animal became *totally deaf*, but no motor paralysis could be discovered in either case.

(3.) In the *lower extremity* of the lobe previously designated, a center was found which seemed to exert an influence upon the *special sense of smell*, and also motions of the nostril and head which indicated excitation of that sense. When the regions adjacent to this convolution were destroyed, the special *sense of taste* became affected; and, when the convolution and the adjacent region were destroyed upon both sides, both *taste and smell were utterly lost.* In regard to these two centers, also, unilateral destruction created the most marked effects upon the side opposite to the lesion, while a bilateral destruction abolished the sense altogether.

(4.) In the *region of the hippocampus* some evidence was given of the control over *tactile sensation*, but the situation of the part rendered experiment upon it difficult, and somewhat less positive than in the areas previously discussed.

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* *Op. cit.*

† That of trephining over the spot selected for investigation, and washing away the brain by a forcible stream of water.

It is to be regretted that the conclusions of this author as to the situation of these special centers in the sensory regions of the cerebrum should not be as positively sustained by clinical and pathological facts as were the conclusions drawn from experimental research upon the motor area of the brain of the monkey tribe. Ferrier endeavors to explain the discrepancy between the facts obtained by experiment, and those afforded by disease of the same regions in the human brain, by the hypothesis that the *special senses* may be governed by a *bilateral* rather than a unilateral impulse, as the experimental facts pertaining to the special senses of sight and hearing seem to warrant, and as all of the cases recorded have been of a unilateral character.

To what extent the physiological subdivisions of the sensory area of the cerebrum may as yet be regarded as of practical utility in diagnosis can hardly be determined, as the field is still a new one, and as the collection of clinical and pathological records is insufficient for a basis of positive deduction.

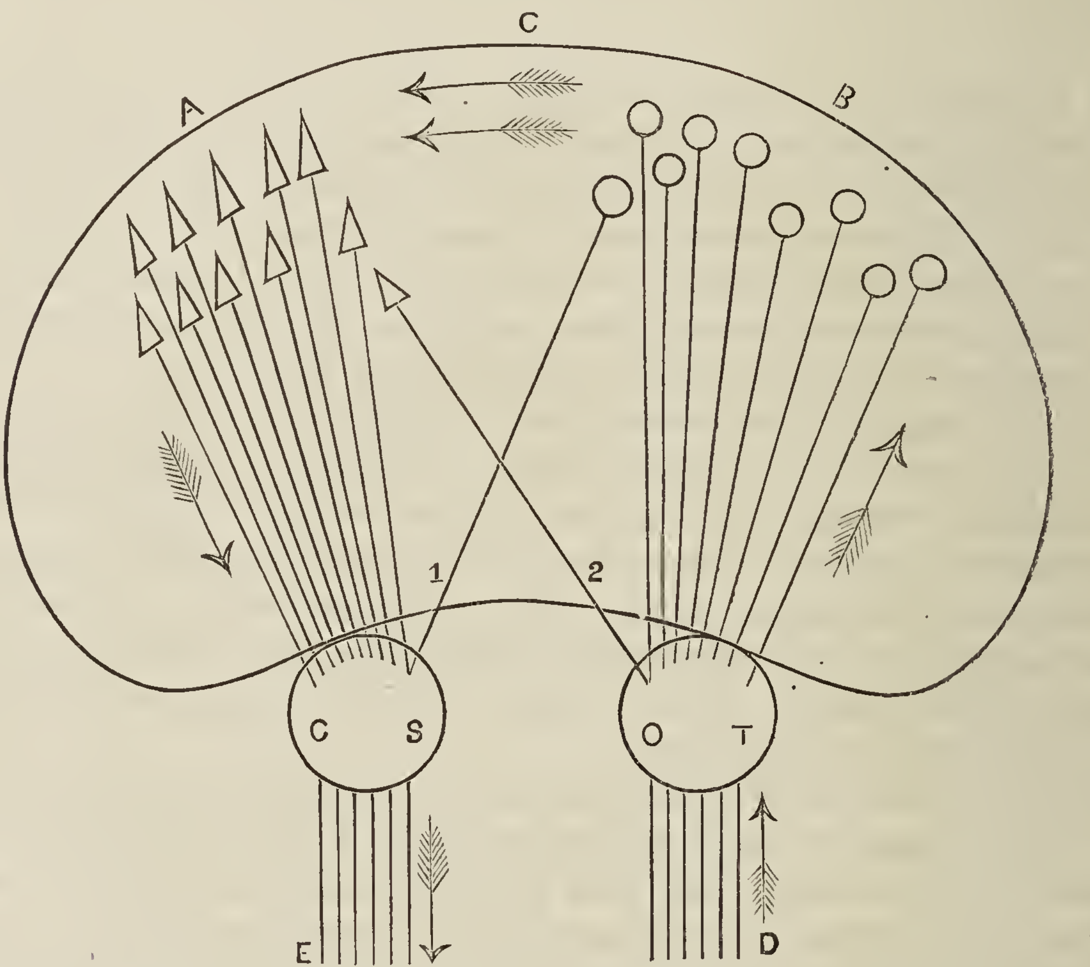

Fig. 12.—A Diagram illustrating the Course of Nerve Impulses in the Cerebrum. (Dodds.)
A, the *motor regions* of the cerebral cortex, represented by arrow-heads; B, the *sensory regions* of the cerebral cortex, represented by circles; C, commissural fibers, connecting the two regions of the cortex (probable, but not positively demonstrated); D, *sensory nerve fibers*, the arrow showing the *centripetal* direction of the impulse; E, *motor nerve fibers*, the arrow showing the *centrifugal* direction of the impulse; C. S, *corpus striatum* (the probable *motor* ganglion of the base of the cerebrum); O. T, *optic thalamus* (the probable *sensory* ganglion at the base of the cerebrum); 1, a few *sensory fibers*, possibly connected with the corpus striatum; 2, a few *motor fibers*, possibly connected with the optic thalamus.

THE CORPUS STRIATUM AND OPTIC THALAMUS.

These two bodies, which are called the "basal ganglia" of each cerebral hemisphere, are undoubtedly a great means of communication between the gray matter of the convolutions and the fibers of the crura cerebri. While it can not be denied that some of the fibers of the internal capsule are in no way connected with these ganglia, and that a portion of the fibers which pass through them on the way to the convolutions are apparently independent of the nerve cells of these ganglia, still the greater proportion of the *peduncular fibers* of the cerebrum are undoubtedly *indirectly* connected with the gray matter of the convolutions, being intimately associated with the nerve cells of whichever of the basal ganglia they are obliged to pass through, in order to reach the exterior portions of the hemispheres.

It is thus affirmed by many of our later physiologists that these ganglia act in the capacity of *middle-men* between the gray matter of the convolutions and the rest of the component parts of the brain, and that they exercise an important influence in mediating between

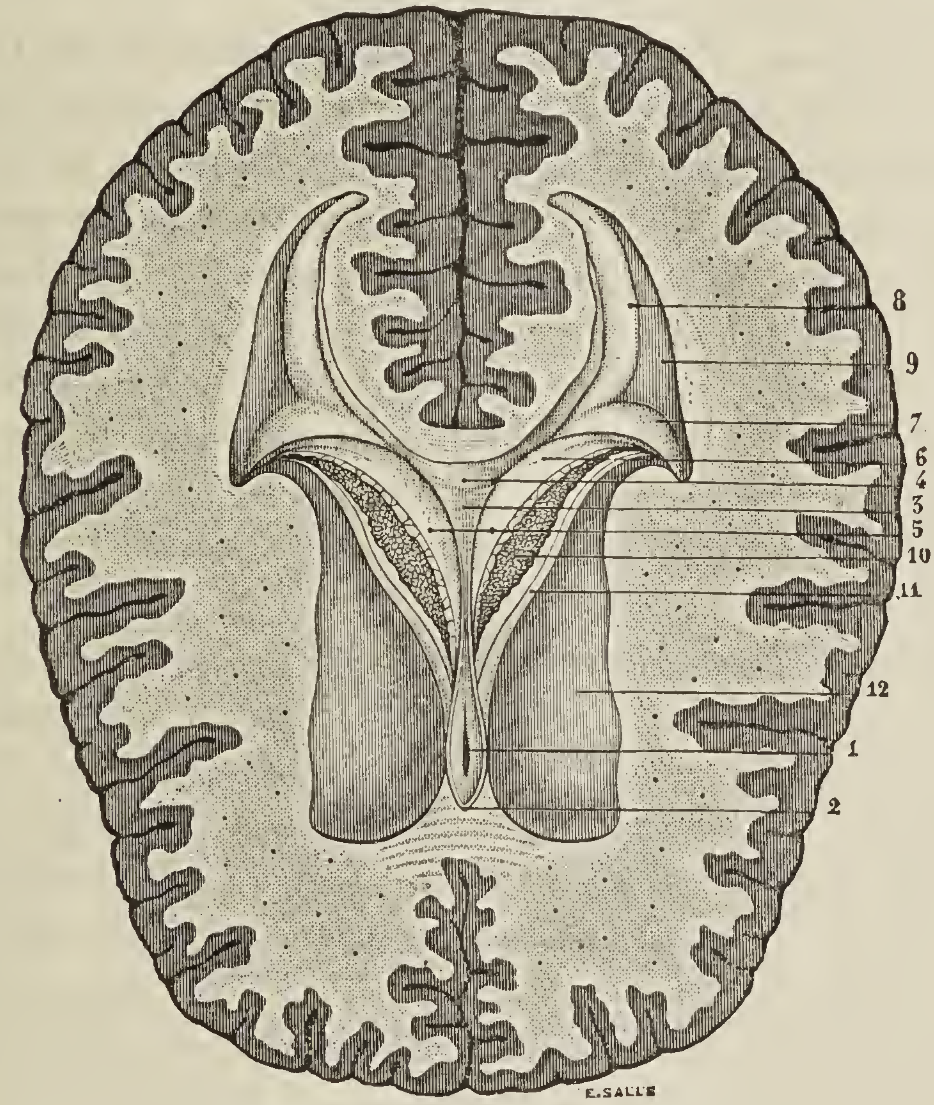

FIG. 13.—CORPORA STRIATA. (Sappey.)

1, fifth ventricle; 2, the two laminæ of the septum lucidum meeting in front of the fifth ventricle; 3, hippocampus minor; 4, posterior portion of the corpus callosum; 5, middle portion of the fornix; 6, posterior pillar of the fornix; 7, hippocampus major; 8, eminentia collateralis; 9, lateral portions of the fornix; 10, choroid plexus; 11, tænia semicircularis; 12, corpus striatum.

the psychical operations of the cortex and the moto-sensory functions of the remaining parts.

We may be able now to use with profit the *two axioms* which Foster, in his work upon physiology, lays down as to the general plan of action of the brain in all its different parts. Thus, he says: "The preceding discussions enable us to lay down two broad propositions:

"1. The functions of the cerebral convolutions are *eminently psychical* in nature; these parts intervene only in those operations of the nervous system in which an *intelligent consciousness* and *volition* play a part.

"2. The hinder parts of the brain, viz., the corpora quadrigemina, crura cerebri, pons Varolii, cerebellum, and medulla oblongata, are capable by themselves of carrying into execution *complex movements*, the coördination of which implies very considerable elaboration of afferent impulses; and they can, in the case of animals, even do this with the total absence of the cerebral hemispheres, corpora striata, and optic thalami."

The hypothesis, which was long since advanced by Carpenter,* and also by Todd,† that the corpus striatum was called into action in the downward transmission of *motor impulses* to the opposite side of the body, and that the optic thalamus was the center for the elaboration and transmission upward of *sensory impressions*, seems to be accepted as proven by some authors, while others are inclined to regard it, in the light of imperfect evidence, as a pleasing but speculative theory. The distribution of the fibers of the crus cerebri certainly points strongly to the corpus striatum as a *motor* ganglion, and to the optic thalamus as one destined to preside over *sensory* impulses.

The results of experimental investigation as to the corpora striata can hardly be said to warrant any positive deductions. In some instances, the entire removal of these ganglia resulted in no loss of either sensation or motion, although it is a well-recognized clinical fact that hæmorrhage into this ganglion causes hemiplegia of the opposite side.‡ It would seem also that convulsions are more frequently produced by lesions confined to the corpora striata than when affecting the optic thalami, and these convulsive movements are generally crossed, like the paralysis of motion, in case of hæmorrhage. Both Ferrier and Burdon-Sanderson found that galvanic stimulation of the corpus striatum could be made to produce convulsive movements, and occasionally a condition of complete *pleurosthotonos* of the opposite side.

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* *Op. cit.* † *Op. cit.*

‡ Probably the pressure created upon the anterior part of the internal capsule explains these phenomena.

The two portions of the corpus striatum which are now recognized, viz., the ventricular portion,* and the lenticular nucleus, have both been the subject of special investigation by Nothnagel; but, while neither seemed to be concerned in the perception of sensory impressions, nothing of a positive character as regards the functions of the two portions was proven, although the ventricular portion seemed to show less effect upon voluntary motion than the lenticular nucleus, when both sides were destroyed.

The optic thalami were once supposed to be the chief ganglia of vision, but that this is an error investigation seems to have partly proven. Longet has succeeded in destroying them upon the two sides, and has been unable to note any impairment in vision or influence upon the movements of the pupil; but Lusanna and Lemoigne † state that blindness of the opposite eye followed destruction of the ganglion upon one side only.

Cases of cerebral hæmorrhage afford but little light upon the function of these ganglia, since the destruction of brain tissue is seldom if ever confined to these ganglia only, and, in those cases where its limits were nearly confined to this region, paralysis of sensation of the opposite half of the body has been noticed without actual loss of motion upon that side, although the movements may have been somewhat enfeebled.

THE CORPORA QUADRIGEMINA.

The experiments of Adamük, by which he endeavored to prove the existence of a center or a collection of centers in the nates, whose function was to control the movements of the eyeball, seem to be substantiated in great measure by Hensen, Voelkers, and Knoll; and that a center also exists in the nates which contracts the pupil is quite as positively ascertained. This arrangement is in accordance with the wise provisions of Nature, since the movements of the eyeball and the pupils, which are constantly associated, are thus controlled by centers in close proximity to each other.

The experiments of Hensen,‡ and also of Voelkers, § seem to point to the *aqueduct of Sylvius*, which lies immediately underneath the tubercula quadrigemina, as the exact seat of these centers, as stimulation of the deep portions of the nates after section produces more uniform results than could be obtained before the deeper parts were exposed.

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* Another name for the "caudate nucleus" of the corpus striatum.

† "Fisiologia dei Centri Nervosi Encefalici."

‡ *Op. cit.*

§ *Op. cit.*

Destruction of either side, in the region of these ganglia, produces blindness of the opposite eye; but the animal can see, even after the cerebral hemispheres have been removed, in case the tubercula quadrigemina are left intact. This latter statement seems somewhat at variance with the results of the experiments of Ferrier upon the *angular gyrus*, as given in a previous portion of this article, in which vision was utterly lost when both sides were destroyed; but it only goes to show that the cerebral hemispheres are in some way connected with the tubercula quadrigemina in the perceptions gained by sight, since, when the hemispheres are removed, an apparently crude vision remains.

The sense of sight has a marked effect upon the coördination of movement, and the discovery of Flourens, that the removal of the tubercula quadrigemina created impairment of this power, sustains the belief that the ganglion of vision must be in some way associated with either the cerebellum, crura, or pons Varolii, in their effects upon coördination of muscular movement.

THE CRURA CEREBRI AND PONS VAROLII.

These parts form the larger portion of the mesocephalon, and are abundantly supplied with gray matter, which seems to be mixed throughout its interior. We thus infer that these parts have some individual functions, in addition to being simply connecting commissures between the upper parts of the brain and spinal cord, but what these functions are it is difficult, at present, to say. Both are unquestionably connected in some way with the power of coördination of muscular movement, since section of either of them results in marked disorder, and often in unnatural and forced movements.

The fact that the nerve fibers decussate in these regions seems proven by clinical evidence, since lesions of the pons Varolii often produce *paralysis of the facial nerve* upon the same side as the lesion, while the opposite side of the body is affected below the face.*

As we might naturally expect from the direction of the fibers of the *pons Varolii*, this portion of the brain acts as a direct conductor of both motor and sensory impressions from and to the cerebrum; while the collections of gray matter within its substance prove it to possess some functions of its own which are independent of the stimulation of the cerebral cortex. Without entering into the different experiments which have been made to determine the exact part which this portion of the mesocephalon plays in the complex machinery of movement and sensation, it seems probable that the pons Varolii is capable of originating a stimulus which may give rise to voluntary motion, without the aid of the hemispheres, and that it probably regulates those automatic movements which govern *station* and *progression*. The experiments of Vulpian and Longet also seem to prove that *sensations of pain* are perceived by the pons Varolii even when the cerebrum and the basal ganglia are removed, which, when these portions are allowed to remain, are probably transmitted to the hemispheres as sensations, and are there remembered.

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* This class of paralysis, where certain cranial nerves are paralyzed on the same side as the existing lesion, while the body is rendered hemiplegic on the opposite side, is called "*crossed paralysis*" (the "paralysie alterne" of the French). It presents *several types*, depending upon the cranial nerve affected: hence the so-called third-nerve (motor oculi) and body type, the fifth-nerve (trigeminus) and body type, the seventh-nerve (facial) and body type. Professor Romberg, of Berlin, and Gubler, of Paris, have done much to elucidate the clear appreciation of this complex form of paralysis and the mechanism of its production.

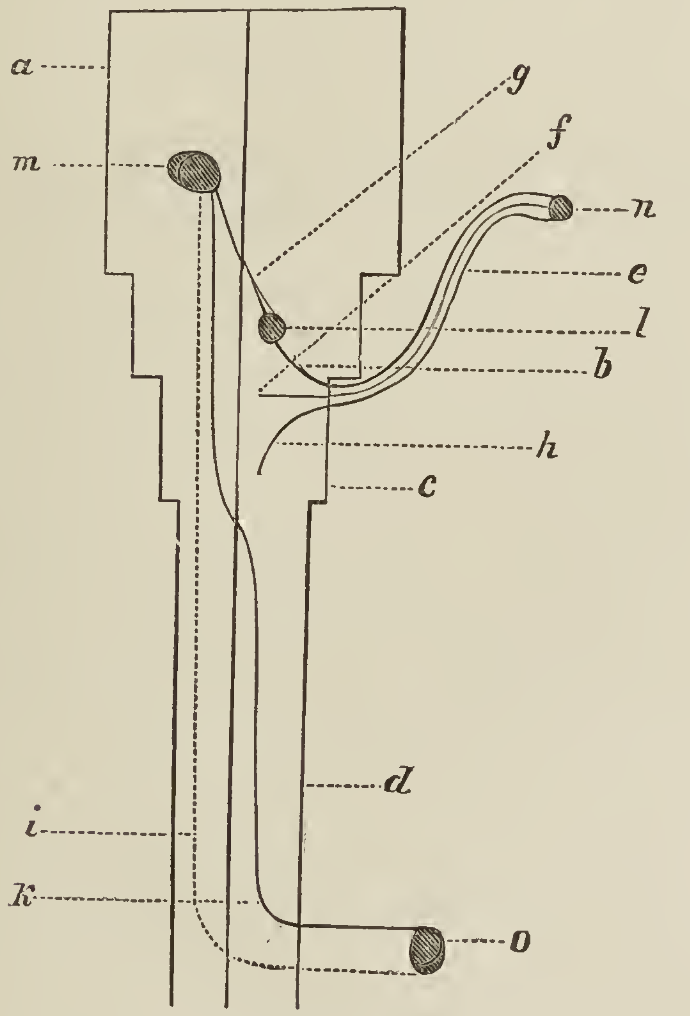

Fig. 14.—A Diagram to illustrate the Method of Production of Crossed Paralysis. (Hammond.)

a, the left hemisphere; *b*, right half of pons; *c*, right half of medulla oblongata; *d*, right half of spinal cord; *e*, right facial nerve; *f*, fiber of origin from nucleus in medulla oblongata; *g*, descending fiber decussating at upper border of pons; *h*, ascending fiber; *i*, sensory root of spinal nerve; *k*, motor root of sensory nerve; *l*, lesion in pons; *m*, lesion in left hemisphere; *n*, paralyzed part supplied by facial nerve; *o*, paralyzed part supplied by spinal nerve.

The facial nerve makes its exit from the side of the medulla oblongata; some of its roots of origin can be traced as far as the floor of the fourth ventricle, others come from the lower part of the medulla oblongata, and others descend from the upper border of the pons, where they probably decussate. Now, a lesion existing in a lateral half of the pons will, therefore, produce a paralysis of the corresponding facial nerve and of the opposite spinal nerves; whereas, if it occur above the point of decussation of the encephalic fibers, the paralysis will be on the opposite side for all parts of the body. These facts are shown in the accompanying diagram (Fig. 14).

It is obvious, from a study of this diagram, that a lesion of one lateral half of the pons (at *l*) will cause paralysis of motion and of sensibility of the opposite side of the body generally, and of the corresponding side of the face; and that a lesion of the hemisphere (at *m*) will produce paralysis of the opposite side of the face and body.

LOCOMOTOR ATAXIA DIFFERENTIATED FROM FUNCTIONAL CONDITIONS WHICH SIMULATE IT.*

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However interesting the subject of progressive locomotor ataxia may be to the student of pathology, it is to the therapeutist uninviting, because unpromising. "One dislikes to bruise one's self against a wall." In the outset, therefore, let me say that I approach this topic with little enthusiasm. It is, on the contrary, quite certain that the great majority of cases of this disease, while often susceptible of alleviation, are quite incurable.

The astonishing affirmations concerning the curability of spinal sclerosis that were current in German literature a few years ago are far from being confirmed by later experience. The grouping of symptoms of many of the cases reported in no way indicated grave lesion of the cord, and in some cases were little more than typical illustrations of simple spinal irritation. In other cases of reported cures the symptoms presented were more in accordance with those observed in posterior spinal sclerosis. In these cases of recovery, of which quite a number have occurred in my own practice, it may be asserted, I think, without fear of contradiction, that serious structural changes in the cord did not exist. The distinction might very properly be made that they were cases of ataxia, but not of posterior spinal sclerosis. In consideration of this evident fact, the following interesting and important question is suggested: In cases presenting symptoms commonly supposed to be pathognomonic of posterior spinal sclerosis, is it possible to differentiate between structural and functional phenomena?

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* Read before the Medical Society of the County of New York, April 25, 1881.

For some years it has been usual with me to give an unfavorable prognosis in *all* cases, but, at the same time, in recognition of the fact that recoveries have occasionally taken place, it seemed justifiable to recommend tentative treatment. If improvement up to a certain point follows and then permanently ceases, it is very probable that we have a case of locomotor ataxia with spinal sclerosis as the cause. If, however, the case be one of simple ataxia, simulating posterior spinal sclerosis, it becomes evident by progressive improvement up to complete recovery.

These occasional recoveries, in what at first sight seemed desperate cases, have led me to study with some care the various symptoms presented, in an endeavor to differentiate between organic and functional cases of locomotor ataxia. Previous to 1876 the cases of locomotor ataxia that came under my observation were not recorded with that accuracy of detail which would render them serviceable in the present inquiry. Since that time, however, every symptom has been noted with greater care, and the cases furnish, as it seems to me, some interesting data upon which to base conclusions.

Case I.—Mr. C., aged forty-three, was first seen in 1876. The prominent symptoms were marked impairment of the power of coördination in walking, anæsthesia of the fingers and toes, inability to quickly touch with the finger any given point, as the nose or ear, decreased tactile sensibility, severe neuralgic pains in the legs, sexual power greatly impaired, increase of electro-muscular contractility, decrease in the rapidity of the transmission of sensation, inability to detect slight differences of weight, and absence of iridal reflex. Tendon reflex not tested. There was no sense of constriction around the abdomen. Treatment by general faradization and central galvanization resulted in very decided alleviation of pain, but in no permanent improvement. Four years later the patient died.

Case II.—Mr. E., aged fifty, was seen in 1876, suffering from anæsthesia and very great incoördination of movement, that had existed for ten years. There were present, also, inability to touch a given point on the face by rapid movement (inaccuracy of touch), impaired tactile sensibility, pains of a diffused and intermittent character, impotence, increase of electro-muscular contractility, impaired rapidity of the transmission of sensation, with inability to distinguish slight differences in weight. The iridal and tendon reflexes were wanting, but there was no sensation of constriction around the abdomen. No form of treatment produced the slightest effect.

Case III.—Mr. M. C., aged thirty-five, was seen in 1876, four years subsequent to the first symptoms of the disease, which were double vision and ptosis. The symptoms now present were incoördination, anæsthesia of the fingers and toes, inaccuracy of touch, impaired tactile sensibility, occasional fulgurating pains, impotence, and absence of both iridal and tendon reflex. There was no increase of electro-muscular contractility, no sense of abdominal stricture, no impairment of the rapidity of the transmission of sensation, and no special loss of power to distinguish slight differences in weight. General faradization was followed by some very pleasant effects in the way of relieving pain and restlessness, and to some extent dissipating the anæsthesia.

Case IV.—Mr. S., aged forty-eight, stated that he was first annoyed by double vision in 1872, followed soon by symptoms of ataxia. When I saw him in 1877, the following symptoms were quite marked: incoördination and anæsthesia, inaccuracy of touch, impaired tactile sensibility, diminished sexual power, increase of electro-muscular contractility, absence of the iridal and tendon reflex. There was little if any pain, no sense of abdominal stricture, no impairment of the rapidity of the transmission of sensation, and no diminution in the power of distinguishing differences in weight. Treatment was followed by no special benefit.

Case V.—Mr. M., aged fifty-five, came to me in 1877, having first observed some impairment of sight, with numbness of the fingers, some two years before, soon followed by incoördination of movement. Examination revealed the additional symptoms of inaccuracy of touch, fulgurating pains, slight loss of sexual power, sense of constriction around the abdomen, together with absence of the tendon reflex. There was also decrease in the rapidity of the transmission of sensation. The electro-muscular contractility was normal, as was also the iridal reflex. This patient received considerable benefit from treatment, the electric brush especially rendering the extremities less anæsthetic, and appreciably improving locomotion for the time being.

Case VI.—Mr. H., aged thirty, came to me in 1878, stating that, eighteen months before, his attention was called to some weakness of the legs and numbness of the toes, followed by incoördination of movement. The additional symptoms were inaccuracy of touch, fulgurating pains of no great severity, slight sexual impairment, increase of electro-muscular contractility, and a feeling of abdominal constriction. There was no impairment of tactile sensibility and no impairment of the rapidity of transmission of sensation. Both the iridal and the tendon reflex were present, and the patient was quite able to distinguish slight differences in weight. General faradization was followed by a decided decrease of the anæsthesia, by increased strength, and improved sleep and appetite.

Case VII.—Mrs. S., aged forty-two, complained, in the beginning of 1876, of anæsthesia in the fingers, subsequently of numbness of the toes, followed in a few months by symptoms of incoördination. Three years after, she came to me with these additional symptoms: inaccuracy of touch, impaired tactile sensibility, absence of the iridal and tendon reflex. On the other hand, she suffered only a very little pain, the electro-muscular contractility was normal, there was no abdominal constriction, sensation was transmitted with normal rapidity, and there was a good appreciation of differences in weight. No appreciable benefit resulted from a short course of treatment.

Case VIII.—Mr. W., aged sixty, came to me in 1878 with symptoms that had begun less than a year previously. He was suffering from incoördination of movement, marked anæsthesia, and some impairment of vision. There were also inaccuracy of touch, impaired tactile sensibility, impotence almost complete, together with absence of both the reflexes—iridal and tendon. The pains were insignificant and not fulgurating in character. Electro-muscular contractility was normal, with no abdominal constriction, no impairment of the rapidity of the transmission of sensation or of the sense of weight. No treatment was of the slightest service, and the patient died within thirty months from the first decided manifestation of the disease.

Case IX.—Mr. D., aged about fifty, was seen in 1879. For some two years he had complained of unsteadiness of gait, with anæsthesia. Submitted to the usual tests, he was found to be incapable of touching his nose or ear by rapid movement of his finger, while the rapidity of the transmission of sensation was much impaired. He was unable to distinguish slight differences in weight, and the tendon reflex was absent. The iridal reflex, on the contrary, was normally active, the sexual impairment was slight, electro-muscular contractility was normal, and there was no abdominal constriction. Severe fulgurating pains were almost constant. The pain, as well as the numbness, was greatly relieved by general faradization and the use of the electric brush, so that there was an appreciable improvement in the steadiness of locomotion.

Case X.—Mr. F., aged fifty-three. In 1875 he became conscious of some numbness of the feet, and observed that in stepping into a carriage it was difficult for him to put his feet directly on the step. He complained also of double vision, and when I saw him in 1880 the incoördination of movement had become aggravated. Additional symptoms were inaccuracy of touch, impaired tactile sensibility, impaired sexual power, increase of electro-muscular contractility, decrease in the rapidity of the transmission of sensation, and in appreciation of differences in weight. Both the iridal and tendon reflex were abolished. The pain was of a dull aching character, not sharp and shooting. There was no feeling of abdominal constriction. Insomnia, a symptom unusually persistent and distressing in this case, was almost entirely relieved by general faradization. Pain also was much mitigated, as well as the anæsthesia, and a feeling of heaviness and stiffness in the legs.

Case XI.—Mr. R., aged forty-one, was seen in February, 1880. Six months previous to this time his health had been fair, but in July he began to complain of pain and to walk badly. Examination revealed inaccuracy of touch, decrease in the rapidity of the transmission of sensation, inability to distinguish slight differences in weight, and abolition of the iridal and tendon reflex. Pains were present, but not of a marked fulgurating character, and the sexual power was only slightly impaired. There was no increase of electro-muscular contractility, and no sense of abdominal constriction. But little if any benefit followed treatment.

Case XII.—Mr. P., aged forty-nine, came to me in 1877 with the following history: He had all his life enjoyed perfect health, until prostrated by typhoid fever on two occasions during the late civil war. After these attacks he did not enjoy the same degree of vigor as before. Four years ago, while walking the street, he became conscious of a disagreeable chilly sensation, which annoyed him more or less for some months. This was followed by a severe itching sensation in the breast and arms, but accompanied by no eruptions. This itching was persistent until, after taking an electrical bath, water-blisters appeared on the surface and the itching disappeared. In 1875 he observed some incoördination of movement, which gradually increased in severity until it was characteristic of an advanced case of posterior spinal sclerosis. In addition to this symptom, he was suffering at the time of my examination from a great heaviness of the limbs, some anæsthesia of the fingers and toes, complete loss of sexual power, together with more or less pain of a shooting character. He was readily able to touch any point on the face or forehead by rapid movement, and could distinguish slight differences in weight as quickly as any one. The electro-muscular contractility was normal, but the patient complained of a painful sensation of constriction around the abdomen. There was no impairment of the rapidity with which sensation was transmitted, and no inability to distinguish slight differences in weight, while both the iridal and tendon reflex were readily elicited. From August 26th to October 22d the patient was submitted to tri-weekly séances of electrization, mainly by the method of general faradization. He improved from week to week, and a year ago, when last seen, was in a condition of approximate health. His movements were perfectly coördinated, he suffered no pain, the anæsthesia was no longer appreciable, and his sexual organs had regained much of their original tone.

Case XIII.—Mr. L., aged thirty-six, presented himself in February, 1879, with well-marked incoördination of movement, dating back some eight months. About a year before, he had suffered much from insomnia, and had been treated for cerebral hyperæmia, but the insomnia continued. In addition to these symptoms, my examination revealed the fact that his sexual power was much impaired, and that he suffered considerably from anæsthesia and aching and sometimes darting pains, not only in the limbs but in various parts of the body. He could, on the contrary, easily touch any point on the face or forehead, however rapid his movement might be, and with normal accuracy could distinguish between differences in weight. The iridal and tendon reflexes were both normally present. This patient quite rapidly improved under the combined influence of general faradization and central galvanization up to complete recovery.

Case XIV.—Mr. R., aged twenty-eight, came to me in December, 1880, suffering from marked incoördination of movement, insomnia, greatly impaired sexual power, neuralgia (more general, however, than local in character), together with a very great degree of physical and mental depression. These symptoms had existed nearly a year, and followed a dissipated career. He did not complain of anæsthesia, and responded affirmatively to the test of touching a given point on the face by rapid movement and in reference to distinguishing slight differences in weight. Sensation was transmitted with normal rapidity, and the iridal and tendon reflex were readily elicited. Under the influence of general faradization and central galvanization, this patient approximately recovered within six weeks.

It will be observed that, of the foregoing fourteen cases, eleven proved incurable, although in most of them more or less alleviation of symptoms followed treatment. The last three patients recovered. In analyzing the whole number, we find that incoördination of movement, pain, and loss or impairment of sexual power were present in all. Anæsthesia was a symptom of all the incurable and of two out of the three curable cases. *Inability to touch a given point on the face (as the nose or ear) by a rapid movement of the hand prevailed in all the incurable, but in none of the curable cases.* Impaired tactile sensibility was present in seven of the incurable, but in none of the curable cases. Impairment or absolute loss of sexual power prevailed throughout the whole number. Electro-muscular contractility was increased in five of the incurable cases; normal in the remainder, curable and incurable. Sensation of constriction around the abdomen was noted in but four of the incurable and in one of the curable cases. The rapidity with which sensation was transmitted was impaired in six of the incurable cases, but normal in all the rest. Inability to distinguish between slight differences in weight was observed in six of the incurable cases only. The iridal reflex was abolished in eight, and the tendon reflex in ten of the incurable cases, but both were readily elicited in the three curable cases.

It is a fact that cases similar to my last three have not unfrequently been confounded with posterior spinal sclerosis, but, if the experience above recorded can be taken as in some measure a guide, it would seem to be no very difficult matter to distinguish between the manifestations of this grave disease and the functional symptoms which so closely simulate it. We can not, manifestly, depend on any one symptom, and perhaps not on any single grouping of symptoms. Although, in the enumeration here given, it will be observed that inability to touch a given point on the face was characteristic of all the grave cases, and absent in all the curable ones, yet there may be cases involving only the lower part of the cord, in which this symptom does not appear throughout the course of the disease. This limitation, however, I believe to be exceedingly rare. In the second stage of locomotor ataxia, anæsthesia of the tips of the fingers, together with inaccuracy of touch, almost invariably exists, showing disease of the upper portion of the cord. As, therefore, this inability to readily touch a given point on the face by rapid movement is so uniformly observed in posterior spinal sclerosis, and is seldom if ever found in cases simulating the same, it may be regarded as one of the most, if not the most, valuable accessory diagnostic sign.

Abolition of the tendon reflex and absence of the iridal reflex are also most important symptoms, since in curable cases these phenomena are seldom if ever wanting. On the contrary, neither impaired sexual strength nor the sense of abdominal constriction is of much value, because they are so common to other conditions; nor should I be inclined to attach great importance to ocular troubles, except in conjunction with more important symptoms. Incoördination of movement is perhaps the only symptom, subsequent to the full development of the disease, which may not occasionally be absolutely wanting. Unfortunately, however, for its value as a single diagnostic symptom, it is *the one* symptom through which functional has been so readily mistaken for organic disease. Pains of a fulgurating character generally precede ataxic symptoms, but not always, and for months and even years the patient may be quite free from more than transient and vague pains.

While, therefore, I believe that in some cases, in which certain of the above-mentioned prominent symptoms co-exist, posterior spinal sclerosis, in its pre-ataxic stage, may be predicted with some certainty, in many, and perhaps the majority of instances, such predictions are as likely as not to be unfulfilled. In the second stage, however, or after the appearance of ataxic symptoms, it is not very difficult to distinguish between structural and functional causes.

Need I add, how important it is to the present comfort and to the future of the patient, that a correct diagnosis be made, and that a functional and curable disease be not mistaken for an organic and incurable one? As regards the electro-therapeutics of this disease (and, however unsatisfactory it may be, it affords quicker and more permanent relief than other methods), I am led, by an experience much larger than is indicated by the cases here specially collated, to insist upon thoroughness of treatment. General faradization will accomplish much more than local applications of either current, and in many and perhaps the majority of cases of posterior spinal sclerosis will be followed by more or less alleviation. In the not very infrequent and persistent condition simulating sclerosis it acts rapidly and effectively.

THE PHYSIOLOGY OF THE VISUAL PURPLE.

By WILLIAM C. AYRES, M. D.

After having written the article on the "Visual Purple" in the December number of this "Journal," in which I endeavored to point out some of the offices it performs in the eye, and one in the March number also, styled "Permanent Pictures on the Retina," I have again been asked many questions in regard to this curious physiological compound, and I have concluded to relate a few experiments I have done in trying to determine its chemical nature, and the source from which it comes.

Of course the most natural question is, What is it? We all know that it is a photo-chemical substance which is found in the rods of those animals which have rods, and that it is sensitive to light, and that, as stated in the second one of the articles just referred to, by its presence we are able to produce pictures in the eye of a living animal, which we can examine at leisure after the animal has been killed and the eye removed from the head.

To the physiologist it is also interesting to know its organic constitution, and I will therefore endeavor to show how we have arrived at this part of our knowledge concerning its nature. The first set of experiments made were for the purpose of discovering whether it owed its color to any mineral or vegetable pigment, and by a careful analysis it was found to be perfectly free from any such admixtures. Then, remembering that it was a product of the body, we tried to find to which one of the groups of substances formed in the animal economy it belonged. To determine this, of course the easiest way was to subject it to the influence of the various digesting fluids, and to see if it changed its color during the digestion. I first collected a quantity of saliva, and, after filtering it, added a quantity of a bright solution of the purple, and placed the mixture in a dark room, in a water-bath at 35° C., for four or five hours. At the expiration of that time the purple was not bleached, as it would have been were its nature such as to be changed by the digestive action of *ptyalin.* I also tested the mixture for sugar, and, having found none, came to the conclusion that the purple was not an amyloid compound. I next prepared a solution of *trypsin*, and went through the same process as with ptyalin, and had the pleasure of seeing the mixture gradually lose its color (not from the heat, since I had another portion in the bath, which had no trypsin in it), and therefore came to the conclusion that the purple was an albuminoid compound, as it was completely destroyed by the digestive action of the pancreatic juice.

The next question is, naturally, Whence its source? To answer this I experimented in the following manner: Knowing that it is an albuminoid, its most probable origin is in a secretory action of some part of the eye; and, since there must be some nervous influence on the action of glands, I made the following experiments. The first of all was to do the regular operation of optic neurotomy precisely as it is done nowadays by ophthalmologists; but it was demonstrated that this had no effect whatever either on the formation or on the bleaching of the purple. Next in order came the trigeminus, which was divided within the cranium by passing an instrument, made for the purpose, just in front of the meatus externus of the ear, and dividing the nerve at the base of the brain. This also had no effect on the action of the visual purple. Having been disappointed in these two experiments, I next removed the top of the skull, and pushed the brain gently back until the oculo-motorius was brought into view, and first excited it with an induced current, and in other cases cut it, but without result. As a last resource I cut the sympathetic in the neck, and excited the end with electricity; but, while the iris dilated *ad maximum*, I could observe no effect whatever bearing upon the matter under investigation. I was consequently driven to some other mode of experimentation, and naturally turned to the blood circulation. The eye was pressed so as to render it blind, or at least deprive it of its free blood currents, and, while this method introduced many unpleasant features, such as rendering the cornea cloudy, etc., I could plainly see that there was some influence on the regeneration or bleaching of the purple, but in what it consisted it was difficult to say; and, while the general result showed that I was coming near the end, I still needed a surer method for exact analysis.

Since the pressure on the eyeball produced so many difficulties, and I still wished to pursue my method of experimentation on the blood circulation, I was driven to tying the arteries going to the brain. The rabbit was the animal used, and, if any one wishes to repeat these experiments, I would offer one or two suggestions as to the accidents that may happen in operating on the blood-vessels in the neck: first, in cutting down upon the vessels, care must be taken, since there is a large external vein passing from one external jugular to the other, which is very liable to be cut if we do not operate with care. This, of course, must be ligated on both sides, and then divided between the ligatures.

The most convenient way to cut off the entire circulation from the brain, and consequently from the eye, is to pass a thread under the arteria innominata and one under the arteria subclavia sinistra. Just here I would like to make another suggestion, viz.: if we cut off the upper end of the sternum with a pair of bone forceps, and gently pull out the mass of fat that lies beneath it, there will be but little bleeding, and we shall have a field of exceeding beauty for operating, as it exposes the origin of the arteria innominata and also that of the vertebralis sinistra. Having passed the threads under the innominata and the subclavia sinistra, we can compress them at will by pulling on the threads, and also restore the circulation by relaxing the traction. Of course the animal will die if the pressure is kept up too long, but we can tell when the entire blood supply has been cut off by the spasms of the whole body after a short time, as described by Kussmaul. On account of the spasms, curare and artificial respiration must be resorted to.

This mode of experimentation gave better results than that of pressure, but still was not quite satisfactory; so I tried still another.

Being inclined to the opinion that the visual purple was a secretion from some source, I next studied the action of various drugs which act upon the secretions generally. The way in which the effect of drugs is best noticed is to make an optogramme in one eye; then wait for a certain time, inject the drug into one of the larger veins of the extremities, expose the second eye, put the animal in the dark for a while, and then examine the conditions of the two optogrammes. I had previously experimented to find out the time it required for an eye, which had been entirely deprived of its visual purple by bleaching, to regenerate it fully, and had found this time to be about forty minutes, and also that the extent of the restitution bore a direct ratio to the time allowed for regeneration, when the regeneration was not complete. Of course, if one eye had been exposed and kept fifteen minutes in the dark, and then the drug administered, the second eye exposed for an optogramme, and the animal killed say fifteen minutes after, if the drug had had any effect on regeneration, by comparing the two optogrammes, and also considering what the result should have been without the drug, and what it had been with it, we could plainly see what had been the toxic effect.

Atropia was the first drug injected, and, since the rabbit has a remarkable immunity from its effects, I administered 12 c.c. of a two-per-cent. solution, but found it had no influence on the extent of the regeneration whatsoever, nor did *nicotine*. I then injected *pilocarpine*, and found that at the expiration of thirty minutes the purple was so far regenerated in the first eye (this eye having had fifteen minutes before the injection and fifteen minutes after it) that the optogramme had entirely disappeared, and that in the second was also obliterated to such an extent that the picture was quite dull, being only distinct in the *visual stripe*.* I also administered *muscarine*, and did the same experiment, when both optogrammes were obliterated; and in subsequent instances I found that the action of this drug was very energetic, causing as great a regeneration in from ten to fifteen minutes as the eye unassisted by drugs could accomplish in from thirty-five to forty minutes.

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* This is a bright-red band running parallel to the white stripe in the retina of a rabbit, in which red band the visual purple is present in much greater quantities than in the remainder of the retina. It is called by Kühne *Sehleister*, is not present in young animals, but is constantly found in most older eyes which do not have a macula lutea or a fovea centralis, and in all probability is an attempt on the part of Nature to give to the animal a region of more distinct vision than it could have were the capacity for visual perceptions distributed equally over the whole background of the eye; and it is also probable that the existence of this visual stripe furnishes us the reason why an animal which has no fovea or macula will turn its eye so that the optical axis will fall on the particular object which it wishes to inspect. The reason, again, that it is a stripe running across the entire background of the eye, and not a mere point, is that few animals have the power of converging both optical axes toward the same object.

The results of these two last experiments can not be over-estimated, since they clearly prove that the visual purple is produced in the eye by a secretory action of some part of it, and, moreover, that we can control this secretion—facts which are extremely interesting from a physiological point of view.

Professor Kühne has also found that, if the fresh retina be taken from the eye and bleached, and put back into the fundus, so that the rods come in contact with the pigment epithelium of the retina (the eye having previously been removed from the head), the purple is in part restored; and he denominates the process *auto-regeneration*. He concludes that the secreting part is from this epithelium, and many facts go to substantiate his opinion. For instance, if we examine the epithelial cells when there has been no active formation of the visual purple for some time, we find above their nuclei, near the top of the cells, a peculiar kind of myeline globules, which show the same chemical reactions as the rods of the retina. They are colored green or black by osmic acid, etc. When there has been an active regeneration of the purple, these drops have all disappeared, and this relation is so constant that we may look upon the two occurrences as cause and effect.

The fact that I was not able to demonstrate a direct influence of any one of the nerves that go to the eye upon the secretion of the visual purple, is quite interesting, and seems to indicate that there are nerve centers in the eye of which we know nothing. Such a condition of affairs finds an analogy in the action of the iris of some animals, for instance, the frog (rana temporaria and r. esculenta). If we amputate the anterior hemisphere of these eyes, and completely detach the iris from the ciliary body, and place it on the lens, keeping it wet with the aqueous humor, and let a beam of bright light fall on it, the pupil will contract when the eye has been removed from the head and consequently when no possible chance of a central nerve action exists. The only way of accounting for such an action is to consider that there are nerve centers in the iris of some animals, at least, which are independent of its nervous communication with the cerebro-spinal system. The controlling centers of the secretion of the visual purple must be within the eye, and reside in some locality not thoroughly understood by physiologists.

While doing these experiments, the field was so new, and the general plan of operation suggested by Professor Kühne so fascinating and interesting, that I have taken the liberty of relating some of its important factors, being confident that they will be appreciated by all who have any interest in physiology in general, and especially in physiological optics.

The results of the investigations are beyond doubt, for in every case comparative experiments were made on both sides, and no conclusion was definitively arrived at without the experiment having been repeated time and again with identical results; and it seems almost absurd when I say that the animals destroyed amounted to hundreds, having been used during three years sometimes at the rate of five or six every day; and, as far as the solutions of the visual purple are concerned, we used, I may say, thousands of frogs, each solution requiring sometimes as many as from forty to sixty eyes. Of course this became quite expensive, and during the latter months Professor Kühne caused many patients, whose fate was certain, to be allowed to die in a dark room or by a sodium light, and the eyes to be removed, packed up in black ice-boxes, and sent to the laboratory for examinations of the human purple.

The purple being an albuminoid compound, as described in the beginning of this paper, it will be destroyed by any putrefaction, but I have found that, if the retina be put into a ten-per-cent. solution of sodium chloride, the purple can be extracted after standing many hours in the dead eye or in the extracted retinæ. In order to liberate the purple from the sheaths of the rods, they must be treated with a two-per-cent. solution of gall, since this is the only substance which will so break up their outer segments as to liberate the purple and not destroy it. (See note at the end of this article.)

If I may be allowed to sum up what has been written in these three articles, the first in the December number of this "Journal," the second in the March number, and the facts here recorded, I may say: We know that the purple is a photo-chemical substance which is sensitive to light, and that its seat is in the outer segments of the rods, whereas it is never found in the cones. The cones, on the other hand, being the only elements found in the fovea centralis, we are forced to the conclusion that distinct vision, both for objects and for colors, is independent of its existence. In the higher classes of animals it is sensitive to light, but in some deep-sea fishes, cephalopods, etc., it has its seat in the rods, but is no longer sensitive to light, although it has the same color as before. In another variety of fishes, the black fish, for instance, it is purple in color, but resides in the slender offshoots of the pigment cells which run in between the rods and cones. Where it is not sensitive to light, the optical structure of the eye is very defective, and any benefit of a sensitive compound would not be appreciated, and it therefore does its work as a stable pigment. It is an *albuminoid compound*, and is a *secretion of the pigment epithelial cells of the retina*, but *this secretion is not controlled by any one of the larger nerve trunks* which have a part to play in the functions of the eye. We know of no drug which can diminish its secretion, but *pilocarpine and muscarine greatly increase it.**

We therefore know what it is and whence it comes. Now for the purpose it serves. In the article in the December number of this "Journal" I endeavored to give some facts which pointed in this direction, among the most conspicuous of which was the relation of the absorption spectrum of the visual purple and that of its partially bleached product, the visual yellow. We know that a solution of the purple does not destroy the most chemical rays, as those of the violet and ultra-violet light, but, on the contrary, the yellow, which is not so deep in color as the purple, cuts off these waves completely. We know also that when the purple is in excess in the retina there must be the greatest chemical effect possible, and that if the light come into such an eye it can not see or is overpowered. Thus, when the eye has been for a long time in the dark and comes into the light, it is dazzled. Again, when the yellow is in excess, there is a minimum of chemical effect capable of being produced in the retina, and the eye does not see either, as when we pass from a bright light into a darker room.

In this paper I have ventured to draw the conclusion that *it is a conservative compound which is placed in the eye as a matter of protection*, and which enables it to perform its duty under the most varied circumstances. In eyes which are not subjected to such variations, it is no longer sensitive to light, but it preserves all of its other characteristics.

Lastly, the idea of using it for medico-legal purposes is impossible, since I was not able to produce an optogramme on the retina of an animal even with a large negative of Helmholtz, the experiment having been carried out with the utmost care and the best of apparatus, with the working of which I was perfectly familiar.†

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* It is probable that, since these drugs have such an influence on this part of the retina, they may have some beneficial effect upon diseases which affect this locality, as in the beginning of retinitis pigmentosa, etc.

† The most convenient way to obtain a solution of gall for bringing the visual purple into solution is to take, say, six ox-gall bladders, and add to their contents 700 grammes of animal charcoal, and boil until no steam is given off; add a good quantity of alcohol, and boil again and filter. The result will be a clear solution of glycocholate and taurocholate of sodium and potassium. Add to this an abundance of ether, and let the mixture stand for a day or so, when the last-mentioned salts will crystallize on the sides of the vessel. Collect these crystals and make a two-per-cent. solution in distilled water,

VENTNOR, ISLE OF WIGHT, AND ITS PECULIAR ADVANTAGES FOR THE INVALID.

By W. THORNTON PARKER, M. D. (Munich),
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In Dr. W. W. Morland's "Florida and South Carolina as Health Resorts," he says of the "constantly increasing travel of invalids" that "this crusade after health is too frequently begun at the *wrong time*, imperfectly carried out when rightly begun, and in very many instances brought to a speedy termination. Whether an invalid, and especially a pulmonary invalid, should go from home at all, should be left implicitly to his physician to determine, who, in addition to careful reflection upon the nature and stage of his malady, will do wisely to inform himself *as to the surroundings awaiting his patient in the proposed place of his temporary sojourn*, and also to assure himself of his ability to command comforts and attendance when among strangers. It is *worse than useless* for those who have not *means sufficient* to be well cared for to leave their homes." It may be considered very unwise to remove an invalid from home at all, and especially so where there is no reason to doubt that consumption has already fully developed itself. It may seem not only cruel to the patient, but unfair to tax the anxieties and the resources of friends, in making the change; but it is now an accepted fact that many who could not bear exposure to our severe winters and cold springs of the North, "and would soon find their malady forced into a fatal activity by the *ennui* of a protracted restriction in an artificial atmosphere, are able, not merely to *live* but to *enjoy life*, in some well-selected health resort." It is undoubtedly true that the consumptive, with careful attention to a proper manner of living, may live for an indefinite number of years. "The balmiest climate can do little for the body while the mind is nipped and chilled." One sees many people in health resorts who

and we have the required solvent for the visual purple. Put ten frogs into a vessel with water at 30° C. in a dark room, and let them remain for one hour. Under the sodium flame, snip off the optic nerve so that the papilla is cut off with it. This is easily done by pressing the scissors against the back part of the eye, with the optic nerve between the branches, when a small part of the sclera will also protrude, which can then be cut off with the nerve. Amputate the anterior hemisphere, and seize the retina with a pair of fine forceps and gently remove it from the eye. Put the retinæ into about a drachm of the gall fluid, and let them remain there for six hours (in the dark). Prepare a small filter, and pour the solution, retinæ and all, into it, when a bright rose-colored solution of the visual purple will slowly pass through.

seem to be *taking* the sweet air, just as they would take pills and powders. Of course it is not surprising that they derive no more benefit from the one than from the other. "We see men of the frailest constitutions who have no time to be ill amidst the constant activity of professional life. Let *them* be idle, let them reflect—and they die. . . . Rust wears away the steel which remains bright while it is used" (Sir E. Bulwer).

Assuming that it is desirable for the invalid to change his climate, what are the characteristics of a suitable health resort? Where shall we advise our patients to go? I propose to discuss very briefly my reasons for advising Ventnor, Isle of Wight, in preference to all other health resorts. In naming its advantages, I shall endeavor to answer the question, What is desirable as a means for restoring health?

I advise Ventnor for American invalids for two reasons, viz.: 1. At our American health resorts the patient is apt to meet either acquaintances or others who know mutual friends. At *our* health resorts the associations of past life are brought forward, and the invalid finds himself more or less busy with the gossip which existed at home, and possibly the target of petty annoyances, which in his enfeebled state of mind and body cause no little suffering. Then, too, where so many Americans are together, the nervous energy, with more or less *morbid* excitement, asserts itself to the injury of all, except possibly a few who seem to thrive upon such food. 2. On the Continent and at foreign health resorts generally, the mind is more or less bewildered by the strange customs and scenes about on every hand, and the evident advantage, which is always readily seized upon, to extort from the stranger, invalid or not, a little more money for a little less value. "If a man is left alone with his ailing consciousness, unable to comprehend the life going on around him, a sick deer in a strange land—what can he do but die?" Now, at Ventnor all these troubles are really wanting. Those who are weary in mind and body can find rest there, and lead a happy life, free from the demands of society, and free from any attempts at extortion. There one can live on in the most perfect of climates, enjoying all that is beautiful in nature and drinking in the most healing and strengthening atmosphere.

It has been repeatedly stated by eminent authorities that *all* sea-coast health resorts are undesirable. On the other hand, equally good authority can be found endorsing the sea-coast for consumption. I do not propose to discuss the matter further than to quote one or two authorities in favor of the sea. Dr. Simons (see Morland on "Health Resorts," page 13) states: "That the pure air of the *open sea* acts in a very favorable manner we have excellent authority, *but it is not so clear* that the air on *sea-shores* is, as a rule, sanitary in its effect." Dr. Simons further states that "Experience has amply proved that a *mixture of land- and sea-air*, such as exists on all our maritime situations, is unfavorable to delicate lungs." Fuller states (see Morland, *op. cit.*, page 14) that "along the shores of the Mediterranean, . . . to which localities consumptive individuals are commonly consigned, the ratio of mortality among the natives from phthisis *equals, and even exceeds*, that which obtains in England." In the "New York Medical Journal" for March, 1881, Dr. Boardman Reed contributes a very interesting article, "What Atlantic City can do for Consumptives"; he quotes Professor Hughes Bennett as follows: "For winter the best climate for the consumptive invalid in this country (Great Britain) is the *south coast.*" Dr. Reed also quotes Dr. Madden as follows: "With few exceptions, the localities resorted to in winter by consumptive patients are situated *on the sea;* . . . such climates are more equable in temperature, being cooler in summer and warmer in winter, and less subject to sudden transitions or great extremes of temperature, than inland places." A most excellent article appeared in the "Boston Medical and Surgical Journal" of January 6, 1881, highly recommending the Isles of Shoals for invalids.

Now, in the midst of all the conflicting testimony, I find that the majority seem to regard the "pure air of the *open sea*" beneficial; it is the *mixture* of land- and sea-air which is feared. The climate at almost all sea-side resorts is certainly affected more or less by the mixture of land- and sea-air; it may be less so at the Isles of Shoals than at any place in this country, but at Ventnor the air is almost if not wholly the *pure air of the sea.* No land breezes can be felt, no streams or ponds of fresh water exist of any considerable size. The geographical situation, far out in the ocean, the southern exposure, and the tremendous "downs" have given to Ventnor a climate which can not be found elsewhere, and which I believe, considering the accessories, is unsurpassed in the world for the treatment of pulmonary diseases. To be sure, the authorities in favor of inland climates as the best health resorts argue warmly in favor of Minnesota, Colorado, and New Mexico.

With regard to Minnesota, I should perhaps rank its climate *next* to that of the Undercliff. The winters are, however, extremely cold, and the summers almost unbearably hot. Those who hold that *this* kind of climate is desirable for the relief of consumption will find no better climate in the whole country. I have seen some very remarkable recoveries, and persons enjoying good health who had *lately* left New England in a well-nigh hopeless condition. I should advise the southern and southern central parts of Minnesota. The northern or lake region of Minnesota is not desirable, in my estimation, as a health resort for those with catarrhal or pulmonary troubles. While Government physician at White Earth Reservation, in northwestern Minnesota, I found from my own experience and from the reports of my predecessor, Dr. Rosser, that among the Indians, half breeds, and whites catarrhal affections prevailed to a great extent the whole year round, but, of course, much was due, in the case of the Indians at least, to change of life, clothing, and food.

The climate of central and southern central New Mexico is beginning to attract considerable attention. Passing through this country in the winter of 1867–'68, I found north of Fort Craig a really wonderful climate, mild and beautiful, but where, unfortunately, it would be quite impossible for the invalid to find a resting place—the murderous Apache roamed unrestrained through the land, and the wild outlaw, American or Mexican, made safety of life and property exceedingly doubtful. It is possible, however, that in a few years, when the civilizing agency of railroads has more fully operated, sanitaria may be established, and the peculiar value of the climate may be utilized by some of the ever-hopeful members of that sad army of climate seekers. Santa Fé, six thousand feet above the level of the sea, is a very wholesome place, and not especially disagreeable as a residence; but it will take some years to civilize the territory, and until then I would recommend invalids to go elsewhere. There is much that is excellent about the climate of Colorado, but, unless one is able to "rough it," and willing to forego the comforts of home, I consider its climate inferior to many other of our health resorts. I found the winter there peculiarly trying and the accommodations miserable, but very high priced.

Of our Southern health resorts I have little to say, except to reiterate my opinion that the social influences at almost all of them are undesirable for the invalid; and this defect is a serious one. The mind must be *at rest—not sleeping*, but rid of all the morbid *excitements* which prevail at native sanitaria. The great drawback at all American health resorts, either on the Atlantic or on the Pacific coasts, or inland, is the lack of varied entertainments which, while diverting the mind, are incapable of injury, and also the absence of homelike accommodations.

With regard to foreign health resorts, it may be said that there is scarcely any better inland resort than Ischl, but for American invalids it would not be practicable, even if it were free from some very serious objections. Of Mentone I would especially advise the invalid to beware.

Concerning the climate of Italy, Burgess * is opposed to the idea that any essential benefit is to be derived from it. For my own part, after several visits to Italy, I have failed to find a season of the year in that climate especially beneficial to consumptives; certainly not the fall, winter, or spring. I shall never forget my own great discomfort while at Florence in the months of February and March, 1873. The Italian houses are built for hot weather, and without suitable conveniences for heating in cold weather. That much suffering exists among foreigners every winter is beyond doubt, and many have found an early death in Italy who went there seeking a mild climate. Many invalids who have gone "abroad" for change of scene have at last become exhausted and contemplate a return to this country, but are not in a condition to endure the long voyage, which seems now even more disagreeable in anticipation than the trip out. While surgeon on the steamers of one of the largest of the ocean lines, such patients repeatedly came under my care.

To such as these Ventnor would afford a safe and pleasant retreat, where they could probably recruit more rapidly than anywhere else. Also those who have been "doing" Europe, until body and brain are at last well-nigh exhausted, would find at Ventnor the quiet and the "pleasure of calm" which would so well prepare them for the long voyage and for the excitement which awaits them upon their arrival home.

Ventnor is indeed the capital, so to speak, of the wonderful "Undercliff" region, which extends from Blackgang to Dunnose, a distance of nearly eight miles. The "Undercliff" region is described by the Rev. James White as "consisting of a platform varying from half a mile to a quarter of a mile in width, bounded on the south by the undulating bays and promontories of the Channel, and on the north by a perpendicular wall of gray rocks which form the buttress to a range of 'downs' of almost mountainous elevation. It is easy to perceive that it unites two of the principal constituents of a beautiful landscape. But when, besides its guardian hills and ever-varying ocean, we remember the richness of its vegetation, the *clearness* of its *air*, and the wild seclusion of its innumerable dells, the glowing expressions of enthusiastic tourists would seem not much if at all beyond the truth.

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* "Climate of Italy in Relation to Pulmonary Consumption, with Remarks on the Influence of Foreign Climates upon Invalids."

"The climate seems most favorable, and the neighborhood most agreeable to the invalid. In the open gardens of the cottages, myrtle and other tender plants flourish abundantly and without need of protection even in winter; snow hardly ever lies on the ground; sunny and sheltered walks abound, and the beach is excellent for bathing."

The National Consumptive Hospital is situated about three quarters of a mile westerly from Ventnor. Dr. Arthur Hill Hassall projected this now justly famous institution. It enjoys a beautiful situation overlooking the sea. It is built upon the cottage plan, in the midst of delightful grounds, where the patients can roam about undisturbed. Croquet and tennis lawns afford ample exercise, and a large "char-à-banc" is used for pleasant drives about the island.

The hospital is intended to consist of sixteen houses, each with accommodations for at least six patients. Each house has neatly furnished bedrooms, parlor, and dining-room. The meals are prepared at the central house. There is also a fine, large chapel connected with the institution, where services are held every Sunday. I was, indeed, surprised to find at the hospital, as also in the town, an absence of depressing influences, which one might naturally expect to find from the presence of so many consumptive invalids.

As the houses are separate and the grounds very large, a patient can thoroughly enjoy himself, and at the same time conform to the regulations of the establishment. A good library, constantly increasing, and plenty of magazines and papers, with music and pleasant in-door games, while away the confinement caused by rainy weather. It is still more surprising to me that, with all these comforts and privileges, better than most of the patients have enjoyed at their own homes, the charges are remarkably low. The cottages for women are east of the central house, and those for the men, west.

The accommodations at Ventnor are generally excellent, and the most fastidious traveler can not fail to be suited. The fact that Ventnor is a health resort does not interfere with its being a pleasure resort also, and this alone is of benefit to invalids in relieving the place of that depressing atmosphere which is often such a drawback to successful treatment. Ventnor is too far from London for cheap excursions or rowdy picnics, and its society is made up of the best families of England. Ventnor is always happy as well as always beautiful, be it in summer or in winter. In reading of health resorts I often notice that the places are described as being *rather* uninteresting, and that patients find little to do, except to take a ride now and then, or to lounge about the piazzas, chat over the gossip of the day, eat, and sleep. Now, at Ventnor, besides the surprising beauty of the situation, which I have vainly attempted to describe, the visitor is interested in a host of pleasures which are easily accessible every day. In the morning, after breakfast, a drive in the excellent carriages, which can be obtained here very cheaply, to Bon Church or Sandown, or a walk along the cliffs. At ten o'clock the people begin to congregate on the "shingle" beach. The beach is a very fine one, with a gradual slope, perfectly safe for bathing. The "bathing machines" are well kept and carefully managed. The "machine" is simply a little house on four wheels. It is pushed out into the water, following the tide in and out. You enter the bathing machine by stepping along a firm plank to the door. The house is divided into two small rooms—one toward the beach, for undressing and dressing, and one toward the sea, where you can remove your wet clothes after bathing. You can easily descend into water three or four feet deep by means of steps from the door facing the sea. The bathing is delightful, and very generally enjoyed. It is quite impossible to describe the many pleasures which are constantly offered—boating, sailing, fishing, riding, driving excursions on the "Tally-ho" and "char-à-banc" to Carrisbrook Castle, Shanklin Chine, and the wild rocks of Blackgang Chine, famous for its wrecks; delightful walks along the cliffs, following the track of the ever-vigilant coast-guardsman; donkey rides to the summits of the "downs," where the atmosphere is especially invigorating; visits to old St. Lawrence and Bon Church and Bon churchyard; promenade concerts two or three times a week on the beautiful iron pier, etc. The churches in Ventnor are very fine indeed. The shops are excellent, and the markets good. The expense of living is very moderate. One can choose between hotels, boarding-houses, furnished apartments, and furnished houses. Of the medical profession I can speak in the highest terms.

One word more of the climate, which is peculiarly fine the year round, while the changes in temperature are very slight. The southern exposure and the protection which the massive "downs" afford from the northern blast render the climate remarkably free from sudden changes. It is also moderately stimulating. The roads and walks are well kept, and soon after the heaviest rain the ground is quite dry and pleasant for walking. The rainy days are few, however, and Nature can be thoroughly enjoyed at all seasons of the year.

I have tried in this paper to bring to the notice of the profession in this country the most delightful spot it has ever been my privilege to visit, and where almost any invalid can be sent with safety and with a reasonable hope for improvement. I have tried not to exaggerate the importance of this health resort. I am sure it is quite unequaled in the Old or in the New World. I should advise invalids from this country to take the steamers of the North German Lloyds line to Southampton, England. These steamers are, in my opinion, second to none afloat in speed, safety, discipline, and the general comfort of the passengers. It is very desirable for the invalid passenger to avoid the excitement of the trip from Queenstown to Liverpool, the whirlpool of excitement, worry, and annoyance at Liverpool, and the long journey by rail to Southampton or to Portsmouth. By the German Lloyds line the passenger is taken comfortably and safely to Southampton, where a pleasant stay of a day or two can be made. Then to Cowes is a short trip, and a short ride in the cars brings the traveler to Ventnor.

> "The quiet homes
> And hallow'd birth-spots of the English race,
> Scatter'd at will beneath the crag's rude face,
> While springs gush round, and near the ocean foams:
> What finds he like to these afar who roams?"—John Sterling.

Editorials.

THE SECULARIZATION OF HOSPITAL NURSING IN PARIS.

In some of the Paris hospitals, notably La Pitié and the Laënnec, the nursing has for some time past been largely if not wholly done by persons having no connection with any religious order. A few of the medical officers, including M. Labbé, M. Cruveilhier, and M. Desprès, seem to have come to the conclusion that this state of things is not for the good of the service. Charges and insinuations have been made against the lay nurses, but not only does the resulting movement in favor of the general restoration of the *religieuses* seem to have been vigorously opposed, but, to judge from the tenor of what some of our French contemporaries have to say upon the subject, and from the temper evinced by the municipal authorities, it seems not unlikely that the nursing will be wholly given over to the laity.

At a meeting of the Conseil Municipal, M. Bourneville read some passages from letters addressed by M. Desprès to the Prefect of the Seine, urging that a lay nurse, if she should chance to be a wife and a mother, was likely to devote to her own family affairs some portion of the time that she might otherwise give to the patients under her care, and suggesting that she might be tempted to take trinkets from the dying, for which, he intimated, a sister would have no use. It would seem as if M. Desprès could conceive of no such thing as a genuine devotion to the sick on the part of lay nurses, for he puts them on a par with domestic servants, and maintains not only that they have no higher motive than to get possession of the paltry pay allowed (six hundred francs a year), but that, as in the case of the domestics, the regular stipend can not be the only inducement for them to undertake the work, and that they must therefore expect to eke it out with perquisites. M. Bourneville justly characterized this style of argument as a "system of malevolent insinuations."

Of course, there has been recrimination. "La Tribune Médicale," in a leading article, gives some very dramatic reminiscences of reprehensible conduct on the part of the sisters. In one instance a young man, convalescent from typhoid fever, gave touching expression to his feeling of thankfulness toward his medical attendants, and to his joy that he would soon be able to rejoin his aged mother in the country. In an hour from that time he was dead. The *religieuse* made her visit, accompanied by the almoner in sacerdotal robes, and, to the surprise of the writer, tarried for a certain time by the patient's bedside. As they quitted it, the poor fellow was found all in a tremor, and, exclaiming, "Then, I am lost!" shortly expired. It would have been no more than fair to temper this dramatic scene with a hint that sudden death during convalescence from typhoid fever is not an unheard-of occurrence. On another occasion a patient of the Hebrew faith, while unconscious and *in articulo mortis*, was surreptitiously baptized by the sister on duty—to the great displeasure of his relatives.

Now, all this sort of talk proves nothing on either side of the real question; it simply displays the imperfection of human nature, both secular and ecclesiastical. The point that we hope to see actually settled is whether, on the whole, the nursing service can be made more efficient and satisfactory by superseding the ecclesiastics with lay functionaries. Our own impression is that a wholesome emulation might be brought about by continuing both sets of nurses on duty. At all events, it is gratifying to learn that M. Desprès's horror of the laity is not shared by such men as Verneuil, Péter, Brouardel, Cornil, Legroux, Damaschino, Nicaise, and Ball, all attached to La Pitié and the Laënnec, who have addressed a communication to the Director-General, in which they speak in high terms of the efficiency and devotion of the lay nurses employed in those institutions.

Special Articles.

ANÆSTHETICS.*

By GASPAR GRISWOLD, M. D., etc.

The discovery of anæsthesia, thirty-five years ago, created that general agitation and confusion which have always attended radical innovations. Its employment was opposed on moral grounds by fanatics, who argued that pain was a part of man's inheritance—a necessary discipline—which it was a sin to try to avoid; and this was especially urged as a reason against the use of chloroform and ether in midwifery. Old and experienced surgeons demurred at the idea of painless operations, even advancing the view that suffering and the scalpel were necessarily associated, and that any attempt to suppress the former must inevitably be followed by disastrous consequences. In this condition of thought it is obvious that the tendency must be to attribute to anæsthetics any unfavorable occurrence in the course of operations performed under their influence, and to credit the most absurd exaggerations. As late as 1806 vaccination had opponents who wrote that the "bestial humor, transferred to man, produced in some cases a brutal fever, in the course of which the eyes protruded horribly, and the whole countenance took on a fearful resemblance to the face of an ox"; in the same way the general adoption of anæsthesia was retarded by the circulation among the credulous and impressible of reports so fanciful and irrational that it seems strange that they should have been believed by any one.

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* Simpson.—"Anæsthesia, Hospitalism," etc.

Snow.—"On Anæsthetics."

Turnbull.—"Advantages and Accidents of Artificial Anæsthesia." 1880.

Wood, H. C.—"Materia Medica, Therapeutics, and Toxicology." 1880.

Clover.—"Ethidene Dichloride." "Brit. Med. Jour.," May 29, 1880.

"Report on the Action of Anæsthetics to the Scientific Grants Committee of the British Medical Association." *Ibid.*, Dec. 18, 1880.

Oré.—"Le Chloral, et la Médication Intraveineuse." 1875 and 1877.

Dawson.—"Bichloride of Methylene." "Med. Record," May 15, 1874.

Levis.—"Bromide of Ethyl." *Ibid.*, March 27, 1880.

Sims.—"Bromide of Ethyl." *Ibid.*, April 3, 1880.

No opposition, however, could long obscure the advantages of the great discovery; a reaction took place, and it soon became the subject of investigation on all sides.

About a year after the introduction of ether, Simpson demonstrated that chloroform also possessed the power of producing anæsthesia; this suggested the idea that similar virtues might reside in other analogous substances, and, accordingly, the researches of Simpson, Snow, and Nunneley soon developed the fact that there existed a considerable number of anæsthetic agents, which resembled each other in many respects, and whose action upon the organism was so nearly the same as to admit of their classification under one general head. A conspicuous common property was volatility, which permitted their rapid absorption, and almost as rapid elimination, by the lungs; as a result of this, their action could readily be controlled. It has since been proved that they are taken into the blood and so reach all parts of the body; and Bernard has shown that their action is upon the nerve centers, by an experiment demonstrating that a ligature so placed as to cut off all circulation from the posterior part of a frog does not prevent the abolition of sensation, voluntary motion, and reflex action in the hind legs when an anæsthetic is injected into the anterior part of the body.

Of the numerous theories which have been advanced in the effort to explain the manner in which anæsthetics produce their effect, only four seem at the present day to receive consideration, viz.: 1, That they act by retarding oxidation and inducing a partial asphyxia; 2, that they produce actual changes in the blood, thus causing secondary inhibition of the function of the sensory nerve cells; 3, that they merely bring about cerebral anæmia, from which condition anæsthesia results; 4, that they have a direct action upon the nervous tissue itself.

As regards the first of these theories, it was suggested by the resemblance between the symptoms of anæsthesia and those of asphyxia, and by the fact that oxidation seems to be diminished during anæsthesia. It is open to question, however, whether the similarity between the phenomena of anæsthesia and those of asphyxia is sufficient to justify an assumption that the conditions are identical; and, certainly, lessened oxidation may as well be the effect of diminished function as the cause of it. In addition, it has been shown that an excess of oxygen in the air breathed does not retard the action of anæsthetics; and nitrite of amyl, which conspicuously diminishes oxidation, is not an anæsthetic.

With reference to the second theory, it must be admitted that some anæsthetics produce changes in the blood; but it has never been proved that these changes are essential to, or even connected with, the production of anæsthesia. And it may be stated, on the other side, that infusoria, which have no red blood, are affected by anæsthetics in the same way as animals which have red blood. Cohnheim opened the abdominal vein of a frog and injected salt water until the blood was displaced from the animal, and the foreign fluid circulating in its place; he found that a frog so treated continued to live for from one to three days, in apparently good health. On these so-called "salt frogs" anæsthetics act precisely as they do on normal frogs; it is obvious that in such a case any effect must be independent of blood changes or asphyxia.

The third theory receives support from the observation of Bernard, that during anæsthesia the brain is anæmic, as in sleep; but it must be urged that this may be an effect as well as a cause. And here, again, the frog, fortunately so tolerant of dissociation of his parts and functions, affords experimental testimony; for complete anæmia of a frog's brain does not render the animal anæsthetic, and upon the same anæmic brain anæsthetics produce their usual influence.

The fourth theory is most in favor, and the tendency is toward considering the action as purely functional. Ludimar Hermann, however, advances the view that, since most anæsthetics possess the power to dissolve *protagon*, they may act by affecting the protagon present in the nerve centers; also Bernard, considering that anæsthetics for the most part tend to cause coagulation of albuminous substances, and observing that in anæsthetized animals the nerve tubes momentarily lose their transparency, would explain anæsthesia as a result of a temporary semi-coagulation of nervous protoplasm. These views are pure hypotheses, and must impress an impartial critic as mainly expressive of a desire to explain vital phenomena by a resort to physical reasoning.

The foregoing remarks do not apply to nitrous-oxide gas, which seems to be devoid of essential anæsthetic properties, and produces its effects by inducing asphyxia.

SULPHURIC ETHER.

The vapor of ether is very inflammable, and has a hot, pungent taste; it is two and a half times heavier than air, and air saturated with it at 80° F. contains about seventy-one per cent.

The inhalation of ether is attended at first with a sense of strangulation. A stage of excitement then ensues, followed by a stage of unconsciousness, anæsthesia, and muscular relaxation; if the inhalation be continued beyond this point, a third stage is produced, characterized by stertor and cyanosis. Operations should be performed during the second stage, the criterion of anæsthesia being insensibility of the cornea, which is supplied by the fifth nerve, the most acutely sensitive in the body. The inhalation should be suspended before the third stage is reached; stertor and cyanosis are dangerous symptoms, and call for removal of the ether. The phenomena of etherization are so familiar to every one that the subject may be dismissed without further discussion.

With the first inhalation of ether there is generally a temporary suspension of respiration; this occurs independently of the pneumogastrics, since section of those nerves does not prevent it. It is dependent upon irritation of the fifth nerve by the vapor, and is not observed after the fifth nerves have been cut, or when the ether is administered through a tracheal fistula. It is a well-established fact in physiology, that forcible stimulation of the fifth nerve causes reflex cardiac inhibition through the pneumogastrics. Stimulation of the fifth nerve by ether might cause diastolic arrest of the heart in this way, if the ether did not at the same time stimulate the cardiac ganglia so as to enable them to resist the inhibitory influence. In the case of chloroform the converse is true; the cardiac ganglia are so far paralyzed by the chloroform that diastolic arrest of the heart may occur, although the inhibitory impulse following stimulation of the fifth is probably less in the case of chloroform than in that of ether, since the latter is so much more irritating. This will receive further consideration under the head of chloroform. Spasmodic closure of the glottis may occur at the outset of etherization, as a result of irritation of the mucous membrane of the larynx, but passes away as the sensibility of the superior laryngeal nerve diminishes under the influence of the anæsthetic. This *spasmodic closure* occurs early, before anæsthesia is complete, and is an *active response to an irritation;* it is to be discriminated from *paralytic closure*, which occurs late, when anæsthesia is complete and has been long continued. The latter is due to a failure of the abductor muscles of the glottis to open it during inspiration, and is much the more dangerous accident. As it most commonly attends the administration of chloroform, it will most appropriately receive attention under that head.

Etherization affects first the cerebrum, then the sensory centers in the cord, then the motor centers in the cord, and finally the sensory and motor centers in the medulla. The nerve trunks are not affected in surgical anæsthesia. The nervous system of the involuntary muscles is very little if at all affected; peristaltic movements of the intestines may still be observed in animals killed by inhalation of ether.

Upon the heart and arteries ether has a distinctly tonic and stimulant action. If a frog be decapitated and anæsthetized, and the heart exposed by section of the pericardium to a vapor of ether under a bell glass, the heart shows no signs of depression, but seems stimulated by contact with the vapor, and continues to act indefinitely. Also, if a rabbit or dog be anæsthetized, and artificial respiration performed with a bellows through a tracheal fistula, and if the heart be exposed and the administration of ether kept up through the bellows, the heart will be seen to continue pulsating vigorously as long as the experiment is persisted in. In both of these experiments respiration is eliminated as a factor, and the proof is conclusive that etherization, even when prolonged indefinitely, has no tendency whatever to depress the heart. It has also been observed that a constant and well-marked contraction of the arterioles is present throughout. Death from ether is the result of the extension of its influence to the medulla, causing cessation of respiration; the heart continues to beat for some time afterward.

Therapeutically considered, ether is a safe anæsthetic; probably very few deaths, if any, have been directly caused by it. If proper precautions are observed, ether probably involves no dangers which do not necessarily attend anæsthesia, considered from an abstract point of view. Accidents such as may justly be attributed to the presence of obscure and unsuspected organic lesions, or to the entrance of foreign bodies into the trachea, etc., will always occur at varying intervals, no matter what anæsthetic is employed. Deaths occasionally occur without apparent reason after such trivial operations as the extraction of a tooth, incision of an abscess, etc., when no anæsthetic has been administered; such accidents are always attributed to anæsthetics if they have been used. Considering the very small number of deaths which have been reported as due to etherization, and throwing out those which admit of the explanations suggested, the conclusion must be strongly in favor of the safety of ether *per se.*

The disadvantages attending the use of ether are: 1st, its inflammability; 2d, the comparatively large quantity required; 3d, the comparative slowness of its action, and the choking sensations which precede its anæsthetic effect; 4th, nausea and vomiting, discomfort, bronchial irritation, etc., following its administration, and lasting from a few hours to even two or three days.

In operations by artificial light the first disadvantage may be very serious; the vapor of ether may be ignited by a light four or five feet distant. *Burning ether is not extinguished by water, but floats blazing on its surface.*

As regards the discomfort attending its administration, this may be in part or altogether obviated by the use of chloral, bromide of potassium, or morphia hypodermically, taken at a sufficient interval before the inhalation is begun. A popular method is to begin with nitrous-oxide gas, substituting ether as soon as the sensibility of the fauces has been abolished.

Nausea and vomiting, etc., occur frequently, but may be mitigated, or even prevented, by a preliminary fast of five or six hours, with a little brandy just before the inhalation is begun. This precaution also guards against the danger of vomited matters entering the trachea.

It is the general sentiment in this country that the disadvantages of ether are not to be weighed against its safety; the fact that the profession in Europe think differently is explained by the inferiority of their ether as compared with Squibb's.

With the inhalation of the first few whiffs of ether, before even the stage of excitement is developed, there occurs a loss of sensation, which lasts only for a few seconds, and yet is long enough to be taken advantage of for short operations, such as the incision of abscesses, etc. This transient condition seems analogous to that induced by "rapid respiration," and probably depends upon some momentary modification of the cerebral circulation. Under the name "primary anæsthesia" it is much employed, as follows: The operator stands with his knife ready; the patient is told to hold one hand raised above his head, and is given some ether to inhale. As the critical moment is reached, the patient becomes temporarily unconscious, and allows his hand to fall. The incision is then made at once. The return to consciousness is complete in a few minutes, and is attended with no nausea or other discomfort.

Ether is best administered by means of a cone; air should be excluded, and the vapor breathed in as concentrated a form as possible. Methods of restoration will be noticed under the head of chloroform.

CHLOROFORM.

The vapor of chloroform is about four times heavier than air, and is *not inflammable;* it has a hot, sweetish taste, and is irritating, but much less so than that of ether.

The inhalation of chloroform is followed by three stages, very similar to those of etherization, with the exception that the sense of choking is absent, and vomiting occurs much more rarely. As in the case of ether, cyanosis and stertor are significant of danger, and the anæsthetic should be withdrawn before the third stage is reached. The vapor of chloroform, being much less irritating than that of ether, does not cause the arrest of respiration and spasm of the glottis, which have been noticed as occurring early in the administration of the latter.

Upon the nervous system the action of chloroform is very similar to that of ether. The retardation and enfeeblement of the heart's action, which almost immediately follow the administration of chloroform, cause the respiration to become more frequent; subsequently it may become shallow, irregular, and uncertain, and may stop from one of the following causes: 1. The medulla may be paralyzed, exactly as in etherization; this is due purely and simply to careless and excessive administration. 2. The functions of the medulla may be compromised as a result of deficient circulation; this is dependent primarily upon depression of the heart's action. There seems to be reason to believe that the respiration may stop before the heart, the latter continuing to beat ineffectually for some minutes, and yet the first cause be heart failure. Such a case would be apt to convey the impression that the first trouble was with the respiratory function. 3. Paralytic closure of the glottis. It is familiar that the vocal cords are separated by the posterior crico-arytenoid muscles to permit the entrance of air in inspiration; also that, if these muscles are paralyzed, the vocal cords are sucked together in the inspiratory act, the glottis is closed, and serious or even fatal dyspnœa follows. It has been shown that the local effects of chloroform are greater than those of any other anæsthetic (it may not be superfluous, in this connection, to call attention to the fact that ether, rhigolene, etc., produce local anæsthesia by *evaporation and consequent refrigeration, and not by specific action*). If a jar be filled with chloroform vapor and covered with paper, and if a hole be made in the paper, and a worm held so that a part of its length is across the hole, and so exposed to the action of the vapor, it will be observed, in a few minutes, that the part so exposed is paralyzed as regards both motion and sensation. On these grounds paralytic closure of the glottis, occurring late in the course of chloroform anæsthesia, has been attributed to the local action of the drug upon the laryngeal muscles.

There can no longer be any uncertainty as regards the depressing influence of chloroform upon the heart and upon arterial tension. Chloroform injected into the jugular vein instantly paralyzes the heart. Exposure of a frog's heart to chloroform vapor rapidly causes its pulsations to cease. If in dogs or rabbits artificial respiration be performed with a bellows through a tracheal fistula, and chloroform vapor introduced through the bellows; and if the heart be then exposed, it can be seen to act more and more feebly, finally dilating and ceasing to beat. After the first few inhalations, the arterial pressure steadily falls until death results. If a vapor of ether be substituted in the bellows for that of chloroform, an increased systolic energy is at once observed; the dilating cavities contract again, arterial pressure rises, and an efficient circulation is reëstablished. The conclusion is obvious, that chloroform is a direct cardiac and vascular paralyzer. It appears, then, that chloroform, administered in sufficient quantity, can depress the heart, causing syncope, or causing such inefficiency of cardiac action that, although the heart still staggers along, respiration may fail from anæmia of the medulla.

But how shall we explain the so-called "unavoidable" sudden death which has been observed in cases where very little chloroform has been administered? If, in a rabbit or dog, a coil of intestine be struck smartly —or if the fifth nerve, or any acutely sensitive nerve, be subjected to forcible stimulation—retardation and depression of the heart, perhaps even stoppage, will be seen to occur. This effect can no longer be produced after the pneumogastrics have been cut. It may be formulated, then, that forcible sensory impressions tend to excite the inhibitory influence of the pneumogastrics upon the heart. To discover if an excitation of the pneumogastrics which merely slows the normal heart might not be sufficient to stop the same heart enfeebled by chloroform, the author made three experiments. Dogs were chosen; they were etherized, and both pneumogastrics were exposed in the neck; a faradaic current was then applied by means of insulated electrodes, one pole upon each nerve. The strength of the current was gradually increased until it was sufficient to cause decided slowing of the heart's action. Chloroform was then substituted for the ether, and its administration was continued until cardiac depression began to show itself. The same faradaic current was then applied as before, and in all cases with the same result: *A faradaic current of sufficient force to depress distinctly the heart of an etherized dog, caused permanent diastolic arrest in the same dog under the influence of chloroform.*

These seem to be fair grounds for the supposition that in many cases of cardiac failure occurring in the first stage of chloroform anæsthesia, the cause is an inhibitory action of the pneumogastrics. This action may be excited by any sensory impression—extraction of a tooth, incision of an abscess, irritation of the fifth nerve by inhaled chloroform vapor, etc.; the heart, when depressed by chloroform, readily succumbs to an inhibitory influence which would be insufficient to arrest it under ordinary circumstances. Such an occurrence is impossible when anæsthesia is complete, since sensation is then destroyed and reflex action in consequence abolished. The chloroform vapor inhaled is at once absorbed and passes immediately to the heart, exerting upon it a paralyzing influence. Those who do not favor the theory of inhibition, just advanced, explain the cases of sudden death alluded to by assuming that some hearts are, by reason of idiosyncrasy, so susceptible to the action of chloroform that they yield at the first contact to its depressing influence, and stop in diastole.

As regards therapeutic application, chloroform is an agreeable and efficient anæsthetic, with but one disadvantage—*it is dangerous.* Various computations give us the deaths as 1 in 5,000, 1 in 3,000, etc.; further, it is stated that the mortality has in the aggregate reached 500. Again, Syme, of Edinburgh, administered it in 8,000 cases without a single death. But it is obvious that all deaths are not reported, that statistics are unreliable, and that, independently of them, the profession is everywhere convinced that chloroform is not safe. In midwifery alone its use is adhered to, on the ground that the pains for which it is used antagonize its bad effects, and that no death has ever resulted from its employment in this connection. The dangers of chloroform anæsthesia have been classified as follows: 1. Early and so-called "unavoidable" death from heart failure; 2. Late cardiac failure; 3. Respiratory failure; 4. A miscellaneous class, including exhaustion, shock, etc.

The first danger is to be avoided by administering a hypodermic of atropia before beginning the inhalation; atropia stimulates the heart directly, and at the same time diminishes the excitability of the inhibitory fibers of the pneumogastrics. It is also recommended not to perform any operation until anæsthesia is complete; sensation being then abolished, reflex inhibitory action is impossible. If we adopt the theory that this form of death is due not to inhibition, but to direct paralysis dependent upon idiosyncrasy, we must abandon all idea of preventing it by any therapeutic measure. A necessary precaution, under all circumstances, is to guard against the administration of the chloroform in too great concentration; three or five per cent. should be the proportion, and the best means of administration is two drachms upon a handkerchief held far enough from the face to permit free admixture of air.

The second danger is cardiac failure from too much chloroform. The pulse-respiration ratio and the force of the heart and of the pulse are to be watched carefully in looking out for this trouble. When it occurs, the patient should be placed head downward at an angle of forty degrees, to guard against anæmia of the medulla, and the abdominal aorta may be compressed. Artificial respiration should be performed, while ether, nitrite of amyl, or ammonia may be given by inhalation. The intravenous injection of ammonia water (containing five per cent. of ammonia gas), to the quantity of a drachm or two, is the most powerful and efficient of all direct cardiac stimulants, and is a safe measure. Indiscriminate application of electricity in the region of the heart, or at different points in the neck, is not advisable; it may do harm, is not likely to do any good, and interrupts other more rational measures of resuscitation.

The third danger, failure of respiration, has been described as occurring from three causes. It requires the same treatment as the second danger, with the addition that, in case of laryngeal obstruction, the tongue should be pulled forward, and laryngotomy performed if necessary.

The fourth danger embraces all sorts of accidents, and it is questionable how many of them are justly attributable to the chloroform. They call for appropriate treatment; but space is lacking for a discussion which would multiply itself so indefinitely.

The mode of administering chloroform has been described. A hypodermic of morphia at the beginning of the inhalation diminishes the excitement during the first stage, and renders it possible to prolong the anæsthesia with a much smaller quantity of chloroform than would otherwise have sufficed. A preliminary fast is advised, and a drink of brandy just before the inhalation does good service by stimulating the heart.

ETHIDENE DICHLORIDE.

This anæsthetic has lately received a great deal of attention, with reference to both its experimental administration to animals and its clinical application. It seems likely to turn out an agent which is efficient, and, at the same time, more agreeable than ether, and less dangerous than chloroform. It resembles chloroform in its action, but depresses the heart less; nothing analogous to the sudden "unavoidable" death from chloroform has as yet been observed to result from the use of ethidene.

Clover has published an account of 1,877 cases, 287 of which were major operations, in which he has employed ethidene as an anæsthetic. His method is to begin with nitrous-oxide gas, substituting ethidene gradually as the patient becomes unconscious; in this way the excitement stage is prevented, and the patient is more readily brought under the influence of the ethidene. As soon as anæsthesia is complete, a little air is admitted with the ethidene vapor at every third or fourth respiration; the quantity of ethidene is regulated by the pulse-respiration ratio and the general steadiness of the patient. As soon as the inhalation is stopped the patient recovers consciousness rapidly, waking as if from sleep.

Although Clover has not yet seen a death from ethidene, he has in several instances observed alarming depression of the pulse, sufficient to suggest caution in its use. In one case a patient died suddenly from heart failure during the struggles of the excitement stage; in this instance the preliminary administration of nitrous-oxide gas had been omitted, and sufficient fatty degeneration of the heart was found post mortem to account for the result. This was evidently a case in which it is difficult to say how far the anæsthetic was responsible. Clover seems inclined to exonerate it, and, in the very article which describes the occurrence, he states that he has never seen a death from ethidene.

Ethidene possesses the advantage of being no more inflammable than alcohol.

ACTION OF CHLOROFORM, ETHIDENE, AND ETHER COMPARED.

Clinical.—1. The dose (administered on a towel) is greater with ethidene than chloroform; the time required to anæsthetize the patient is longer with chloroform.

2. Vomiting is equally frequent in the case of both agents, but is more protracted in that of chloroform; this symptom occurs independently of the duration of anæsthesia or the quantity of anæsthetic administered.

3. With both agents the pulse is retarded and fails, while the respirations become more frequent; these changes are more frequent and more marked with chloroform.

Physiological.—1. Chloroform and ethidene, in animals, reduce the blood pressure decidedly—chloroform more rapidly and more decidedly; ether does not affect the blood pressure unfavorably.

2. Chloroform may reduce the blood pressure suddenly and apparently capriciously; ethidene has not been observed to do this.

3. In one instance, artificial respiration restored a dog whose heart had stopped beating, for a considerable time, from the effect of chloroform; it is therefore an efficient means of resuscitation.

4. Ethidene seems much safer than chloroform; in no instance did the heart or respiration, though sometimes much reduced, stop entirely during its administration.

5. Chloroform affects the pulmonary circulation most; ethidene next; ether least.

6. The quantity of air and the time required to restore the circulation in the lungs are in inverse ratio to the amount of anæsthetic vapor and time necessary to stop it.

7. The changes produced in the lungs are the same in all, the only difference being in the rapidity of their occurrence; these changes are: (1) retardation and ultimate stoppage of the circulation in the lungs, first in the capillaries, then in the arterioles, etc.; (2) the epithelium cells and their nuclei disappear; (3) the capillaries contract, their walls become less distinct or disappear, and the contained corpuscles disintegrate.

Practical.—1. It is necessary to remember that frequency of the respirations denotes heart failure, and that diminished blood pressure may show itself by respiratory failure from anæmia of the medulla.

2. It is essential that the possibility of chloroform and ethidene—especially chloroform—reducing the blood pressure suddenly, even after their administration has been stopped for some little time, should not be lost

sight of. Artificial respiration should be continued, even though all evidence of cardiac action has ceased.

3. As regards comparative danger, the order is: chloroform, ethidene, ether; as regards facility of resuscitation, the order is inverted: ether, ethidene, chloroform.

4. The danger with chloroform is silent and sudden, approaches from the cardiac side, and is difficult to meet; the danger with ether is noisy and progressive, approaches from the pulmonary side, and may be efficiently warded off by artificial respiration. Ethidene resembles chloroform, but is less dangerous.

NITROUS-OXIDE GAS.

All the symptoms attending the inhalation of nitrous oxide are explained by the hypothesis that it acts by inducing asphyxia, except a primary stage of excitement which is not observed when asphyxia is otherwise produced. We must, then, attribute this excitement to a specific action of the gas, which has not yet been explained. The grounds for considering the anæsthetic action of nitrous oxide to be due to asphyxia induced by its inhalation are as follows: 1. Although at a high temperature it is decomposed, and yields its oxygen so as to support combustion, at the temperature of the body it is a stable compound, and does not yield its oxygen so as to support respiration. (Nitrogen and oxygen in the atmosphere are merely mixed, and not in chemical combination as they are in nitrous oxide.) An animal lives no longer in nitrous oxide than in pure nitrogen; and animals breathing an air containing from sixty to eighty per cent. of nitrous oxide and from forty to twenty per cent. of oxygen are unaffected.

2. Anæsthesia occurs at the time that the blood becomes black; and analysis shows marked deficiency of oxygen in the blood during anæsthesia. The brain does not become anæmic, as in anæsthesia from chloroform, ether, etc., but presents the appearances observed in asphyxia.

3. In man, the inhalation of pure nitrogen causes the symptoms of nitrous-oxide anæsthesia, all but the preliminary excitement.

We must believe, then, that, although nitrous oxide produces a preliminary excitement which is more or less characteristic, it causes anæsthesia by inducing asphyxia. Therapeutically, it is characterized by the rapid occurrence and disappearance of anæsthesia, unattended with after-effects. In spite of the great number of cases in which it has been used, only three deaths have been reported. No anæsthetic has been used so carelessly, by persons so little qualified, and with such a neglect of all precautions; the fact that under these circumstances only three deaths have been known to occur would seem to indicate that it is almost absolutely safe, the gas being pure and the patient normal.

BICHLORIDE OF METHYLENE.

This anæsthetic, otherwise called chloromethyl, was introduced by Dr. B. W. Richardson, of London, in 1867, and since that time its use has been especially identified with the name of Spencer Wells. It has not been used much in this country, principally on account of being very expensive and very hard to keep, undergoing deterioration when exposed to light and air. It may be given from a handkerchief like chloroform, but, being very volatile, inflammable like ether, unfavorably affected by light and air, and very expensive, it is best that some form of inhaler should be employed: that known as Dr. Junker's is the best.

Chloromethyl has a pleasant odor, and is not irritating; anæsthesia is produced more rapidly by it than by any other agent. It produces no muscular excitement; the patient seems to fall asleep, the lips remaining red, and no cyanosis or pallor occurring. It does not depress the heart as chloroform does, and the respirations are conspicuously regular and quiet. Recovery is much more rapid and easy than from chloroform or ether; nausea and vomiting are exceptional. The quantity required is very small—half a fluidounce may be sufficient to produce anæsthesia and maintain it for half an hour. Six deaths have been reported, attributed to its use; it is probably not so safe as ether, inclining somewhat to the dangers of chloroform. It is a question, however, if in some cases its easy and comfortable action, free as it is from muscular excitement, nausea, etc., does not outweigh its dangers. In ovariotomy and similar operations, the fact that it rarely causes vomiting is much in its favor. In the reports of Guy's Hospital, it is accused of one death in five thousand administrations. Its high price and the difficulty of obtaining it are its principal drawbacks.

BROMIDE OF ETHYL.

This anæsthetic has recently been brought into notice by the labors of Dr. Laurence Turnbull and Dr. J. R. Levis, of Philadelphia, who have used it more than two hundred times. It is claimed by those who advocate it that it is less dangerous than chloroform; acts more rapidly, and is recovered from in a shorter time; and is less apt to cause vomiting. In a word, its reputed advantages are very similar to those of the bichloride of methylene; in addition, it is not inflammable, is not very expensive, and is not sufficiently volatile to require an inhaler. It is given by pouring two drachms upon a piece of lint, and *pressing this tightly over the nose and mouth,* letting the patient breathe through it; a drachm may be added, as required. No fatal case has occurred in Philadelphia from its use; but one has been reported by J. Marion Sims, in which the patient, in whom anæsthesia was kept up for an hour and a half by the administration of four fluidounces and a half of the ethyl, died thirty hours afterward with suppression of urine and choleraic discharges. Post-mortem examination disclosed some degeneration of the kidneys. How far the death was attributable to the anæsthetic is questionable. In no case in Philadelphia had the patient been under the influence of ethyl more than forty minutes; perhaps danger may attend its prolonged administration. In Dr. Sims's case, the fecal discharges and everything about the patient smelled strongly of the ethyl, and the patient seemed saturated with it. Two hundred cases is a small number to decide from, and the matter must be considered still *sub judice.*

INTRAVENOUS INJECTION OF CHLORAL.

As a result of experiments upon animals, Oré, in 1873, read before the Academy of Sciences, at Paris, a paper upon the induction of anæsthesia by the injection of chloral into the veins. He employed a solution of chloral (ten grammes in thirty-five grammes of water); he introduced carefully a small cannula into the median cephalic vein, and injected one gramme (fifteen grains of chloral, contained in one drachm of his solution) every minute until the patient slept: this generally occurred in five minutes. He then injected half the quantity every minute until anæsthesia was complete. The whole amount of chloral used varied from five to eight grammes (seventy-five grains to two drachms).

The anæsthesia produced has the following advantages: 1. The respiration is not disturbed. 2. Anæsthesia lasts about forty-five minutes without further attention; this may be shortened or prolonged by changing the dose of chloral. 3. No excitement. 4. No vomiting. 5. Anæsthesia efficient, yet calm and sleep-like. Dr. Oré assures his hearers that there is no danger of phlebitis, emboli, etc.; and that a faradaic battery will at once rouse the patient if he seems too deeply unconscious and depressed. In a paper dated 1877, he presents fifty-three cases—fifty-one successes, and two deaths—one death, not because the chloral was dangerous, but because there was no battery at hand; the other from suppurative phlebitis, made the subject of much plausible explanation. It seems evident that, in spite of their alleged inferiority, ether and chloroform will not, in the United States at least, be at once displaced by the intravenous injection of chloral. The author advises the injections in strychnia poisoning.

MIXED ANÆSTHETICS.

Many attempts have been made to secure the advantages and escape the disadvantages of the different anæsthetics by mixing them. The Vienna mixture, under which eight thousand operations have been performed without a single fatal accident, is three parts of ether to one of chloroform. Billroth's favorite mixture is three parts of chloroform, one of ether, and one of alcohol. The well-known ACE mixture, especially recommended by the English chloroform committee, is alcohol one part, chloroform two parts, ether three parts. It has been advanced that the very different diffusion and volatility of the different anæsthetics must result in irregular proportions in the mixed vapor, and that this is a strong argument against the use of mixtures. It is not established, however, that these variations do any harm.

A number of attempts have been made to render chloroform safe by adding to it a heart stimulant. Sanford adds two drachms of nitrite of amyl to the pound of chloroform. Turpentine has been added to chloroform for the same purpose. Both these mixtures have the disadvantage of causing headache subsequently.

RAPID RESPIRATION.

If a patient be required to breathe as vigorously and forcibly as possible for two or three minutes, a temporary condition of unconsciousness with loss of sensibility results, lasting a few seconds. Dizziness occurs, lasting for some moments, and a suspension of respiration is observed, seeming to denote that the blood is for the time overcharged with oxygen. The normal condition is regained in a few minutes. No explanation has been advanced of these phenomena, beyond the hypothesis that they are analogous to "primary anæsthesia" from etherization, and are dependent upon a modification of the cerebral circulation which temporarily suspends the functions of the brain. The short period of anæsthesia has been taken advantage of for the extraction of teeth, incision of abscesses, etc. Of course, everything depends upon the mental attitude of the patient; nothing can be accomplished with one who can not be induced to breathe with the necessary force and frequency.

LOCAL ANÆSTHESIA.

Local anæsthesia is to-day produced exclusively by freezing the part by projecting upon it the spray of some highly volatile substance. Rhigolene, the most volatile liquid known, is the best for the purpose; unfortunately, its inflammability is so great that its sale has lately been forbidden by law in this city. Ether does very well, but requires a few minutes to act; this delay renders the process somewhat painful. The bromide of ethyl has lately been used in France, with good results; it is not inflammable. The method is the same with all. An ordinary atomizer produces a satisfactory spray.

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Reviews and Literary Notes.

Syphilis and Marriage. Lectures delivered at the St. Louis Hospital, Paris. By Alfred Fournier, Professeur à la Faculté de Médecine de Paris, etc. Translated by P. Albert Morrow, M. D., Physician to the Skin and Venereal Department, New York Dispensary, etc. New York: D. Appleton & Co. 1881. Pp. xii–251.

Among the many valuable contributions of Alfred Fournier to the literature of syphilis, none will be more gratefully appreciated by the profession at large than the lectures on Syphilis and Marriage. In none of its aspects is the dreaded pest of syphilis more formidable than in those relating to marriage, to family, to heredity. Dangers thence arise much more serious than could affect a single individual. When a patient who has had syphilis seeks advice regarding a contemplated marriage, these dangers are present to the physician's mind. He feels that he is confronted by a question which imperatively demands the most positive and explicit answer, while it is at the same time a question which tasks to the utmost all the resources of his knowledge, his judgment, his conscience. A word may suffice to decide the patient's course; a premature consent may be responsible for a future of disgrace, remorse, and far-reaching misery; an unreasonable opposition may frustrate a happy union, and do irreparable and needless injury to the patient's future. There are doubtless severe moralists who would for ever forbid marriage to the patient who has had syphilis. Not so uncompromising is our author. He has collected statistics of eighty-seven patients who had had syphilis, who married with no untoward consequences—the fruit of these eighty-seven marriages being one hundred and fifty-six healthy children. It is not an agreeable reflection that such a considerable portion of human history as is represented here might have been totally thwarted by an unwarrantable interference. Speaking of one of these families, with which he was on terms of intimacy, the writer says that often, "when seated at this happy hearthstone," he reflects on the mistake he would have committed had he "from an exaggerated fear of the old disease" prevented this marriage, "had nipped in the bud all the present felicity of these two beings, so affectionately united, . . . had prevented their beautiful children from coming into the world." The writer does not cite these cases for the purpose of veiling the sad consequences which flow from so many syphilitic marriages, and which he very fully describes, but they suffice to show the unwisdom of interdicting marriage to all patients who have ever had syphilis, absolutely and under all conditions.

The evil consequences, just referred to, of syphilitic marriages are discussed by the writer under three heads, viz.: Dangers to the wife, dangers to the offspring, and dangers to the common interests of the family. The health of the wife is endangered in two ways—by direct contamination from syphilitic lesions upon the husband, and by infection through a syphilitic fœtus. This latter mode of transmission of the disease is termed by Fournier "syphilis by conception," and is the same that Hutchinson has called syphilis by "fœtal-blood contamination." These different expressions imply different explanations of the pathology of the maternal infection. The one assumes that the disease is conveyed to the mother by contact with an infected ovule at the moment of conception, while the other implies a later transmission of the disease through the medium of the utero-placental circulation. The author, though he adopts the expression "syphilis by conception," declines to commit himself to either theory. The general fact, however, that it is possible for the disease to be reflected from the fœtus to the mother is firmly maintained.

Dangers to the offspring are separately considered, according as the disease is derived from the father alone, or from the mother alone, or from both parents together. The power of the father to procreate a syphilitic fœtus, the mother remaining healthy, is fully admitted. But the influence of paternal heredity is regarded by the writer as less potent than that of maternal heredity. When the father is syphilitic and the mother healthy, it is stated that the child has a fair chance of escaping inherited taint. On the other hand, when the mother is syphilitic and the father healthy, the offspring seldom escapes. This statement can not easily be verified. Naturally, cases of pure undoubted maternal heredity are encountered extremely seldom. When both parents are syphilitic, that is, when the ovule is impregnated by a syphilitic father and nourished with the blood of a syphilitic mother, it is clear that the fœtus will more surely be affected than if the father alone were diseased. It is such cases of "mixed" heredity, doubtless, that constitute most of the statistics presented by Fournier to show the influence of maternal heredity.

Among the dangers to which syphilis of the parents renders the offspring liable are mentioned certain indirect effects which do not belong to any of the ordinary forms of hereditary syphilis, but which show themselves in certain constitutional defects or morbid tendencies. The children are weak, puny, stunted in growth. "One would call them old people in miniature, with a skin too large for them over certain points. Sometimes, again, they present on the anterior surfaces of the legs a condition of sub-œdematous puffiness of the integument, which no longer glides over the subjacent parts, but which seems to be united to the cellular tissue and the aponeurotic tissues of this region." It is difficult to "raise" such children. They become more and more feeble, and at length fall away rather than die. In other cases, they die suddenly without assignable cause. They often succumb to some comparatively trifling ailment. Moreover, these children are very prone to nervous affections. Meningitis is very common among them. "You may be sure," the writer says, "that many children, backward, *imbecile*, or *idiotic*, are nothing else than the products of syphilitic heredity."

All these possible dangers (to many of which we have here scarcely alluded) must be present to the physician's mind when asked to sanction the marriage of a syphilitic patient. The writer next proceeds to state what the conditions are under which marriage is permissible. They are summarized as follows: "1. Absence of existing specific accidents. 2. Advanced age of the diathesis. 3. A certain period of absolute immunity consecutive to the last specific manifestations. 4. Non-threatening character of the disease. 5. Sufficient specific treatment." Fournier puts the period at which syphilis ceases to be transmissible by inheritance at from three to four years. Hence he forbids any patient to think of marrying before the lapse of this period from the inception of the disease. Further than this, he insists upon a period of immunity from all manifestations of the disease of "not less than eighteen months to two years." Again, all cases are not to be regarded alike. Some offer a much more unfavorable prognosis with respect to marriage than others. Three classes of cases are mentioned as especially unpromising: 1. Cases prone to relapse. 2. Grave cases—such as show "a precocious tendency to the visceral forms of the disease and to such forms as ordinarily occur at an advanced age of the disease." 3. Cases implicating important organs, such as the eye, the brain, the spinal cord, etc. With reference to brain syphilis the following emphatic language is employed: "In my opinion, from my own observation, every specific manifestation toward the brain constitutes an almost *express* interdiction to marriage by reason of the future consequences to which it leaves the patient exposed. For my part, I would most energetically dissuade from all designs of marriage any man who, even though cured of his syphilis, had disclosed to me undoubted accidents of specific encephalopathy in his past history, such as an epileptiform attack, an apoplectiform stroke, hemiplegia, mental affections, etc. Such accidents are, in my opinion, absolutely *incompatible* with marriage. I will not even discuss the supposition of a possible marriage under these conditions."

Thus far the writer has confined himself to questions that arise prior to marriage. It is the discussion of these questions which occupies the first and principal part of the book. The second part treats of the questions which arise after marriage. First, he considers the prophylactic measures which are called for before the wife has been contaminated; he next considers the case where the wife is healthy, but *enceinte*. In this latter connection some interesting observations by Ricord are quoted, regarding the propriety of subjecting the wife to anti-syphilitic treatment, in view of the possible contamination of the fœtus. With the negative purport of these observations Fournier fully agrees. The next situation to which attention is given is that in which the wife is syphilitic, but not pregnant, and finally that in which the wife is syphilitic and *enceinte*. Last of all, the author considers the dangers to society, regard being had more particularly to the subject of nursing.

All these topics are discussed with intelligence, rare practical good sense, and withal great seriousness. There runs throughout the book a certain grave and elevated tone which will not fail to command respect. The subject-matter often concerns questions which call for something more than pure scientific knowledge. Moral obligations are everywhere closely interwoven with the maxims of expediency. We are equally impressed by the astuteness of the man of science and by the dignity and humanity of the man of culture. We are convinced by the one, persuaded by the other. As may be inferred, this is a book which might be read with profit not only by the physician but by the syphilitic patient. The physician could not better fortify his counsels than by prescribing the perusal of "Fournier on Syphilis and Marriage" to such a patient contemplating matrimony.

As to the translator's work, little need be said. A good translation needs no comment. The medium through which the author is read should be so transparent as not to attract attention. We think that Dr. Morrow has preserved the spirit of the original, and exercised good taste and intelligence in his interpretation. There is but a single objection we would make, and that is to the rather frequent recurrence of the word "pox." We do not think this objection is prudish. The word has become so vulgarized, so degenerated, in English that it can not be regarded as the exact equivalent of *la vérole.* It does not suit the general tone of the text, which is dignified and elevated.

Minor Surgical Gynæcology. A Manual of Uterine Diagnosis and the Lesser Technicalities of Gynæcological Practice, for the Use of the Advanced Student and General Practitioner. By Paul F. Mundé, M. D., Professor of Gynæcology in Dartmouth Medical College, etc. With three hundred illustrations. New York: William Wood & Co., 1880. Pp. xi–381. [Wood's Library of Standard Medical Authors.]

The subscribers to "Wood's Library" are to be congratulated upon the appearance of this manual, for it teems with practical details, many of which are not to be found in more ambitious works, but yet which it is far more important for the practitioner to be familiar with than with what may be termed major gynæcology.

Part I, comprising more than a hundred pages, is devoted to the various means of diagnosis, chiefly the different methods of physical examination, with and without instruments. We are pleased to see that Dr. Mundé is inclined to think that digital examination with the patient in the standing posture "is by no means as frequently employed in this country as it should be." For ourselves, we seldom omit it, and when we do we almost always regret it. In simple exploration by the vagina with the index finger, the author gives the usual recommendation in regard to the arrangement of the fingers, viz., that the examiner should fold "the three last fingers" of the hand as tightly into the palm as possible, and that after the index is introduced the backs of these fingers should be pressed against the perinæum. Our own experience is, that it is better to keep these three fingers straight and allow them to occupy the cleft between the nates. We think we can thus reach higher, and can carry out the examination with less pressure upon the external parts. Our author thinks that the healthy ovaries can seldom be felt by the vaginal touch alone, but that in many instances they may be recognized by abdomino-vaginal palpation.

We wholly coincide with Dr. Mundé in his high estimate of Sims's speculum. "In my opinion," he says, "the Sims speculum is the only absolutely perfect speculum, and it seems to me that it would be preferable to give up the specialty rather than practice without it. Even now, aided as the practitioner is by all the improved methods of examination and diagnosis described in the modern text-books, he who neglects to examine a patient suffering from uterine disease with the Sims speculum labors under a disadvantage, and deprives his patient of one of the greatest discoveries in modern medical science. Only through the Sims speculum is the cervix seen undisturbed and movable, with non-everted os and unimpeded circulation, and can the uterus be examined in its normal position, unfettered by the inclosing and fixing branches of a speculum." The directions given for the use of Sims's speculum are such as ought to enable any intelligent physician to employ it with satisfaction, but we find no explanation in the text of the odd manner of introducing the blade (with the left hand) depicted in Fig. 55. Dr. Mundé illustrates the necessity of giving a detailed description of Sims's posture by a cut showing an incorrect posture, such as an insufficient description might lead one to adopt; but on the opposite page he gives a cut showing what he considers to be the correct posture, but which we can not accept as such. Indeed, the picture seems to us far more suggestive of the attitude that Milton described as Lucifer's in the phrase "squat like a toad." The drawing reproduced from Savage, too, although "modified," is but little less faulty. In fact, almost all the illustrations in the volume, except those borrowed from the instrument makers, are wretched. We presume, however, that this is no fault of the author's. He seems to prefer that the nurse should hold the instrument by its free blade rather than by its shank, but to this we can not give our approval, for we think it must be less satisfactory to the physician and more irksome to the nurse.

On p. 91 the danger of using the sound as a repositor is very satisfactorily pointed out, and we regret to see that in a subsequent part of the book (on p. 304) any good that might come of this teaching is quite undone. Caution is inculcated, to be sure, and the reader is warned that the movement of rotation should be chiefly with the handle of the sound, the point being merely turned on its own axis, etc.—in short, the stock way of putting it. We affirm that the movement thus described is altogether impossible, and that therefore the caution intended can not be carried out. We think, too, that Dr. Mundé expresses an undue confidence in the harmlessness of the curette for diagnostic purposes. "I always do it," he says, "in my office or the out-door clinic."

Part II is devoted to therapeutics. It abounds in practical hints upon points that constantly come up in practice, and that no one concerned in this branch of our art can afford to be ignorant of. In this portion of the work we find very little that seems to us objectionable, but much that is highly to be commended. Among the lesser slips (due doubtless to the haste with which, as almost every page bears witness, the book was put together) we would call attention to the recommendation to use a solution of *chloride of sodium* to neutralize an excess of acid after applications of that character. Whoever should unwittingly follow this advice would simply fill his patient's vagina with chlorine, and might get an unpleasant whiff of that gas himself. The author speaks highly of iodized phenol, and states that he uses it almost exclusively as a caustic for erosions of the cervix in case a nitrate-of-silver solution is counter-indicated or fails. It is almost inconceivable that Dr. Mundé could mention such a proceeding as the application of spray to the interior of the bladder, even incidentally, unless to hold it up to ridicule. It is but fair to state, however, that he only quotes another practitioner as "having used it [spray] with benefit in the bladder." As to its application within the uterus, he dreads the possible effects of "a gust of air blown into and distending the normally collapsed cavity," but hints that after dilatation, in properly selected cases, and used very gently, it might prove highly useful. In this, as in some other instances, we think that Dr. Mundé's desire not to omit anything that his readers would care to be informed about, and his complaisance in regard to measures that his good nature simply leads him to look upon as plausible, burden the book with much that might judiciously have been suppressed.

In discussing the various methods of dilating the uterine canal, the author lays stress upon the fact that the use of graduated sounds entails the necessity of counter-traction, more or less forcible, upon the cervix, whereby severe lacerations are apt to be inflicted with the tenaculum. The result, however, he thinks is generally a more permanent dilatation than that which is produced by branched dilators. It is remarked, too, that by using counter-pressure upon the uterus through the abdominal wall, as recommended by Fritsch, more force may be used with safety, and of course without recourse to the tenaculum.

The practice of forcibly breaking up pelvic adhesions for the purpose of correcting malpostures of the uterus is spoken of with commendable caution. We think it might well have been condemned altogether. It has been done with impunity in a number of instances, but our means of ascertaining the exact state and relations of pelvic inflammatory exudations are at present inadequate to enable us to distinguish with reasonable certainty in what cases such a procedure would be safe.

Dr. Mundé's remarks on pessaries are, in the main, very judicious, but we perceive that he is a believer in the lever-like action of the Hodge pessary and its congeners—a belief that seems to us destitute of the slightest shadow of foundation. From a practical point of view, however, the author deals with the subject of pessaries more satisfactorily than any writer we know of except Goodell, and the superiority of Goodell's teaching lies not so much in any peculiarity of his ideas or in any greater knowledge of the subject as in his consummate power of description. Dr. Mundé states that pessaries do not, as a rule, interfere with coitus, "if the wife be informed by her physician how to adjust the pessary for the moment in case it should chance to be in the way." But how should it be adjusted? The author gives no hint upon this point.

We think the section on Artificial Impregnation might well have been omitted, especially as the author informs us that Sims himself has "given up the practice altogether, and does not expect to return to it again."

In spite of what we consider to be faults in the book, we most cordially recommend it as likely to be of the utmost service to the general practitioner. The style of writing is marred by the bad habit of piling up adjectives before the nouns to which they refer, and by other inelegances, and some sentences are to us absolutely unintelligible; but much of this we ascribe to the haste with which the work seems to have been written. The mechanical make-up of the volume is about what we are accustomed to see in the series to which it belongs—not creditable. We have already given our opinion of the cuts.

Observations on the Cæsarean Section, Craniotomy, and on other Obstetric Operations. With Cases. By Thomas Radford, M. D., F. R. C. P., Edin., F. R. C. S., Eng., etc., Honorary Consulting Physician to St. Mary's Hospital, etc. Second edition. London: J. & A. Churchill, 1880. Pp. xii–225.

This work is a vigorous plea for the Cæsarean operation, and a most forcible arraignment of the British practice of craniotomy. We have noted a few passages, mostly bearing upon technical points. "Before the incision is made," says the author, "it is of the utmost consequence to raise the deflected uterus up; or else the fundal tissue, which abounds with large anastomosing vessels, must unavoidably be divided. Neglect of this caution has, no doubt, led to the hæmorrhage which happened in some of the cases. A division of the structure of the upper part of the fundus of the uterus must certainly interfere with the regular or efficient contraction of this organ, and thereby produce a gaping character of the wound." "Unnecessary tediousness should be especially avoided. If the uterus be slowly incised, the stimulus of the knife instantaneously throws this organ in [? into] violent and irregular contraction, which separates the placenta and entails mischief on both the mother and the infant." The incision ought to extend well toward the fundus, but not into it, and not too far down into the cervix, because of its comparative want of contractility. On p. 111 Dr. Radford expresses himself as "strongly of opinion that sutures ought not to be introduced into the uterine walls," as he thinks that they would generally prove not only useless, but, by the uterine tissue yielding, injurious; yet, in giving his conclusions (p. 118), he says: "To arrest uterine hæmorrhage and prevent its return, suture the uterus with silver-wire stitches."

Incidentally the author bears testimony to the influence of Dr. Clay's early successes in ovariotomy as aiding to remove the opposition that formerly prevailed to the operation. He does not think that laparo-elytrotomy will prove to be any less dangerous than the Cæsarean section performed, as it should be, early on the first day of labor. Porro's operation he considers to be one of great importance and one that requires attentive consideration; he then quotes from a recent paper on the subject by Dr. Isaac E. Taylor, of this city.

In these days, when the Cæsarean operation and its alternatives are exciting so much attention, Dr. Radford's work ought to be widely read, and ought to exert a marked effect upon the sentiment of the profession in Great Britain. The volume is beautifully printed, and unusually free from errors. We notice, however, three instances (all on p. 145) in which the plural of the word *ilium* is given as *ilii.*

A Treatise on the Principles and Practice of Medicine; designed for the use of Practitioners and Students of Medicine. By AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine and of Clinical Medicine in the Bellevue Hospital Medical College, etc. Fifth edition, revised and largely rewritten. Philadelphia: Henry C. Lea's Son & Co., 1881. Pp. 1150.

SINCE the appearance of the fourth edition of this justly popular work in 1873, the attention of the profession has been turned more particularly to pathological anatomy, and many things connected with it are now familiar subjects of discussion which were at that time considered abstruse. It has not been uncommon of late years to hear praises of "Flint's Practice" as a clinical work, coupled with regret that so little space in it was devoted to pathological anatomy and to the consideration of such comparatively new topics as Leucocythæmia, Pernicious Anæmia, Localization of Cerebral Diseases, etc. With a view to meeting the requirements of the day, the author has rather rewritten than revised his work, intrusting to Dr. William H. Welch, Lecturer on Pathological Histology in the Bellevue Hospital Medical College, the task of presenting with each subject a fair and impartial abstract of the established facts bearing upon its pathological anatomy.

In Part I, under the head of General Pathology, are articles upon Thrombosis and Embolism, Inflammation and Exudation, Tumors, Tubercle, Uræmia, and Septicæmia and Pyæmia, by Dr. Welch. These are characterized by a terseness and clearness as rare as they are desirable in the discussion of subjects so complicated and involved. A fair selection of facts and experiments, with a very felicitous expression of the views held by prominent authorities, lays the essential points before the reader in a readily intelligible and available form. This is conspicuously true of the chapters on Tumors and on Tubercle.

In the section on Diseases of the Respiratory System Dr. Flint has not changed many things; he abandons the idea of a level upper limit of flatness in pleuritic effusion, admitting the "letter-S curve" of Garland. As a result of careful consideration, he maintains his former position, that pulmonary phthisis is essentially tuberculous, in opposition to the view of Virchow and Niemeyer, lately somewhat widely disseminated, that the vast majority of cases of phthisis are purely inflammatory, and that tuberculosis is a comparatively rare affection.

A new section has been added to the work, dealing with the recently elaborated Diseases of the Hæmatopoietic System, viz.: Leucocythæmia (Splenic, Glandular, and Myelogenic), Pseudo-Leucocythæmia, Pernicious Anæmia, and Addison's Disease. These interesting subjects are exhaustively treated, much that is complicated in their pathological character and nomenclature being most agreeably simplified.

The section on Diseases of the Nervous System is excellent. The clearness with which Pachymeningitis and the Diseases of the Spinal Cord are described is in strong contrast with the obscurity which usually surrounds those subjects. A very good article on the Localization of Cerebral Diseases expresses in small space the recent advances in this direction—such as the significance of lesions of the "internal capsule" with reference to "late rigidity" and non-recovery, "descending degeneration," etc. The motor tract in the cortex is also well described, along with the various cortical centers recently discovered.

Beyond the evident care with which numerous authorities have been consulted, together with its conspicuous clearness and precision of style, the work commends itself by a certain spirit of conservatism and strong common-sense which is eminently characteristic of all the author's writings. A most reassuring freedom from prejudice and partisan spirit—a careful and unbiassed criticism—expresses itself throughout. The exhaustiveness of the clinical histories, and the practical manner in which diagnosis and treatment are discussed, attest the author's great experience; at the same time, thorough research has so far collected the important observations of other writers that reference to their books is rarely necessary. An excellent index saves the reader much time and trouble.

How to Use the Forceps. With an Introductory Account of the Female Pelvis and of the Mechanism of Delivery. By Henry G. Landis, A. M., M. D., Professor of Obstetrics and Diseases of Women and Children in Starling Medical College. Illustrated. New York: E. B. Treat, 1880. Small 8vo, pp. 168. [Price, $1·50.]

We have derived great pleasure from reading this little volume. It displays an amount of originality of thought and fervor of argument seldom met with in medical books of American origin. The gem of its substance lies in the author's amplification of an article published by him some years ago in the "American Journal of the Medical Sciences," in which he described the pelvic canal as really consisting of two convergent and coalescent canals. The author's account of the mechanism of labor, interwoven as it is with the elaboration of this theory of a double canal, is in the highest degree logical and ingenious. So assured is he of the truthfulness of his ideas, that he does not hesitate to join issue with the masters of the art of midwifery—a spirit that we should like to see oftener displayed by medical writers.

As to the practical part of the book, its salient feature is, that the forceps should always be applied with reference to the attitude of the child's head, regardless of the relations the instrument may assume to the mother's pelvis. Much ability is shown in defending this view, but we fancy that the experienced practitioner will continue to apply the forceps in the future as he has in the past—any way in which it will lie.

The proof-reading has been rather careless, especially with proper names. The only glaring fault that we have noticed is the statement that "the perineal body is a stout fibrous band extending from one tuber ischii to the other."

Books and Pamphlets Received.—A Text-Book of Human Physiology; designed for the use of Practitioners and Students of Medicine. By Austin Flint, Jr., M. D., Professor of Physiology and Physiological Anatomy in the Bellevue Hospital Medical College, New York, etc. Illustrated by three lithographic plates and three hundred and fifteen woodcuts. Third edition, revised and corrected. New York: D. Appleton & Co., 1881. Pp. xviii–978. ═══ The Human Body: an Account of its Structure and Activities and the Conditions of its Healthy Working. By H. Newell Martin, D. Sc., M. A., M. B., Professor of Biology in the Johns Hopkins University, etc. New York: Henry Holt & Co., 1881. Pp. xvi–621–34. ═══ Anatomical Plates, arranged as a companion volume for "The Essentials of Anatomy" (by William Darling and A. L. Ranney) and for all works upon Descriptive Anatomy. Comprising four hundred and thirty-nine designs on steel by Professor J. N. Masse, of Paris, and numerous diagrammatic cuts selected or designed by the editor, together with explanatory letter-press. Edited by Ambrose L. Ranney, A. M., M. D., Adjunct Professor of Anatomy in the Medical Department of the University of the City of New York, etc. New York: G. P. Putnam's Sons, 1881. [Price, $3.] ═══ Ueber den Kreislauf des Blutes im menschlichen Gehirn. Untersuchungen von A. Mosso, Professor der Physiologie an der Universität Turin. Mit 87 Abbildungen im Text und 9 Tafeln. Leipzig: Veit & Comp., 1881. Pp. vi–222. ═══ The Structural Anatomy of the Female Pelvic Floor. By David Berry Hart, M. D., F. R. C. P. E., Assistant to the Professor of Midwifery in the University of Edinburgh, etc. Being a thesis for graduation at the University of Edinburgh, for which a gold medal and the Syme fellowship were awarded. Edinburgh: Maclachlin & Stewart, 1880. ═══ The Relations of the Abdominal and Pelvic Organs in the Female. Illustrated by a full-sized chromo-lithograph of the section of a cadaver frozen in the genu-pectoral position, and by a series of woodcuts. By Professor Alexander Russell Simpson and Dr. David Berry Hart. Edinburgh and London: W. & A. K. Johnston, 1881. ═══ The Principles and Practice of Surgery, being a Treatise on Surgical Diseases and Injuries. By D. Hayes Agnew, M. D., LL. D., Professor of Surgery in the Medical Department of the University of Pennsylvania. Profusely illustrated. Vol. II. Philadelphia: J. B. Lippincott & Co., 1881. Pp. 1066. [Price $7·50.] ═══ Manual of the Physical Diagnosis of Diseases of the Heart, including the use of the Sphygmograph and Cardiograph. By Arthur Ernest Sansom, M. D. Lond., F. R. C. P., Assistant Physician to the London Hospital, etc. Third edition. Philadelphia:

Presley Blakiston, 1881. Pp. xii–300. [Price, $2.] ═══ A Treatise on Bright's Disease and Diabetes, with especial reference to Pathology and Therapeutics. By James Tyson, A. M., M. D., Professor of General Pathology and Morbid Anatomy in the University of Pennsylvania, etc. With illustrations. Including a section on Retinitis in Bright's Disease, by William F. Norris, A. M., M. D., Clinical Professor of Ophthalmology in the University of Pennsylvania. Philadelphia: Lindsay & Blakiston, 1881. Pp. 312. [Price, $3·50.] ═══ A Manual on Diseases of the Eye and Ear, for the use of Students and Practitioners. By W. F. Mittendorf, M. D., Surgeon to the New York Eye and Ear Infirmary, etc. Fully illustrated with colored lithographs and woodcuts. New York: G. P. Putnam's Sons, 1881. Pp. viii–445. [Price, $4.] ═══ Imperfect Hearing and the Hygiene of the Ear, including Nervous Symptoms, etc. By Laurence Turnbull, M. D., Ph. G., Aural Surgeon to the Jefferson Medical College Hospital, etc. Third edition, with illustrations. Philadelphia: J. B. Lippincott & Co., 1881. Pp. xxii–9 to 147, inclusive. [Price, $2·50.] ═══ Photographic Illustrations of Cutaneous Syphilis. By George Henry Fox, A. M., M. D., Clinical Lecturer on Diseases of the Skin, College of Physicians and Surgeons, New York, etc. Parts 4, 5, and 6. New York: E. B. Treat. ═══ Aids to Diagnosis. Part i—Semeiology. By J. Milner Fothergill, M. R. C. P. Lond., etc. New York: G. P. Putnam's Sons, 1881. Pp. 75. [Student's Aid Series.] ═══ Aids to Diagnosis. Part ii—Physical. By J. C. Thorowgood, M. D., M. R. C. P. New York: G. P. Putnam's Sons, 1881. Pp. 61. [Student's Aid Series.] ═══ Memoir of James Aitken Meigs, A. M., M. D., etc. By Laurence Turnbull, M. D. Philadelphia: Pugh Madeira, 1881. Pp. 18. ═══ Proceedings of the Academy of Natural Sciences of Philadelphia. Part iii, Oct.–Dec., 1880. ═══ Transactions of the Obstetrical Society of London. Vol. XXII, for the year 1880. ═══ Transactions of the Rhode Island Medical Society. Vol. II, part iv, 1880. ═══ Annual Review of the Drug Trade of New York for the Year 1880. Prepared by D. C. Robbins, Esq. ═══ Rapid Breathing as a Pain Obtunder, etc. By W. G. A. Bonwill, D. D. S. [Reprint.] ═══ On Quebracho Bark. By Dr. Adolph Hansen. [Reprint.] ═══ The Immediate Cure of Inguinal Hernia by a New Instrument. By W. Dunnett Spanton, M. R. C. S. E., etc. [Reprint.] ═══ Contributions to Ophthalmology. By Dr. C. R. Agnew. [Reprint.] ═══ Sympathetic Inflammation following Operations for Cataract. By David Webster, M. D. [Reprint.] ═══ Spasm of the Intra-ocular Eye Muscles, a frequent cause of annoying and serious eye defects. By Julian J. Chisolm, M. D., etc. [Reprint.] ═══ Anomalies of Perspiration. By J. H. Pooley, M. D. [Reprint.] ═══ An Improved Self-retaining Rectal and Vaginal Speculum. By A. F. Erich, M. D. [Reprint.] ═══ Strangulated Veins of the Uterus, etc. By Thomas H. Buckler, M. D. [Reprint.] ═══ A Statistical Report of 252 Cases of Inebriety. By Lewis D. Mason, M. D. [Reprint.] ═══ Failure of Vaccination, etc. By Carl Spinzig, M. D. [Reprint.] ═══ Report of the Pennsylvania Hospital for the Insane, for the Year 1880. By Thomas S. Kirkbride, M. D., Physician in Chief and Superintendent. ═══ First Biennial Report of the North Carolina Board of Health, 1879–1880. ═══ Ninety-first Annual Report of the Board of Trustees of the New York Dispensary, January, 1881.

Proceedings of Societies.

NEW YORK SOCIETY OF GERMAN PHYSICIANS.

A STATED meeting was held November 26, 1880, Dr. E. NOEGGERATH in the chair.

THROUGH-DRAINAGE IN EMPYEMA.—Dr. HEINEMAN exhibited a child, four years old, with empyema. A simple incision and the introduction of a medium-sized tube did not suffice to bring about the desired result. A second incision was therefore made, and through-drainage adopted, whereupon the hectic fever disappeared, and the pleural cavity gradually became contracted. ═══ Dr. GERSTER spoke of the excellent results of König's method of making an incision and draining the cavity under strict antiseptic precautions. Quite recently he had seen two cases terminate favorably in a very short time, in which the pleural cavity was washed out but once. If the operation was performed early, the lung soon expanded, and the pleural membranes became adherent. In cases with massive pseudo-membranous deposits and extensive rigidity of the lung tissue this method offered no special advantages. ═══ Dr. JACOBI remarked that in empyema each individual case required its special treatment, and no single method of operation, however good, would do in every case. He argued that early resection of a rib was bad practice, as a child's thorax usually adapted itself to a collapsed lung.

LACERATED WOUND OF THE EYE.—Dr. OPPENHEIMER showed a patient who had come to him with a large lacerated wound of the eyeball, produced by a heavy object striking the eye. The iris was prolapsed, and the anterior chamber was filled with blood. The doctor removed the prolapsed portion of the iris, and closed the scleral wound by sutures. Healing went on uninterruptedly, and six weeks after the accident the patient was able to see $\frac{20}{70}$. At present a traumatic cataract was forming, but perception of light was good. ═══ Dr. GRUENING remarked that such wounds were extremely dangerous, and that sewing up the sclera was a practice of quite recent date. Sutures through the sclera should be inserted as superficially as possible.

CANCER OF THE ILEO-CÆCAL VALVE.—Dr. GERSTER presented the specimen, which also showed an enormous dilatation of the lower portion of the ileum. A perforation of the intestine had given rise to a large fecal abscess, which was incised about a fortnight before the death of the patient, and a drainage tube inserted. A large amount of pus, fecal matter, and necrotic tissue was removed by irrigation. Death was supposed to have ensued from septicæmia. Before the formation of the abscess the symptoms were those of an intestinal catarrh. The autopsy showed a circular cancerous infiltration of the gut. The small intestine was extensively agglutinated to the inner surface of the ilium. The cancerous infiltration had not produced a stricture of the gut, and no symptoms of stenosis were observed during life. The patient was fed on liquid diet exclusively. Dr. Gerster referred briefly to six other cases of perityphlitic abscess which had come under his notice at different times during the past three years. In the case of a young girl, perforation by a foreign body through the vermiform appendix was complicated with suppurating coxitis, the pus having found access to the joint by way of the bursa iliaca. An incision was made, but finally erysipelas set in, and terminated the patient's life. In a third fatal case, an operation was not permitted, and death took place from peritonitis. In the case of a child, a kick upon the abdomen caused a perityphlitic abscess. Of the seven patients, five were operated upon; of these, two died. Of the two patients not operated upon, one died of peritonitis, and the other got well under the application of ice. The incision was made as advised by Willard Parker.

Laryngeal Diphtheria.—Dr. Seibert exhibited the pharynx and larynx removed from the body of a child, six years of age, which died of diphtheritic laryngeal stenosis. On ordinary careful inspection not a trace of diphtheritic membrane could be found during life, and the case, seen at this stage, gave the impression of a so-called genuine membranous croup. The autopsy showed a few diphtheritic patches on the posterior surface of the soft palate.

Fatty Degeneration of the Heart.—Dr. Seibert exhibited a specimen of fatty heart, showing a genuine degeneration of the muscular elements, combined with an enormous deposit of pericardial fat. This fatty deposit had produced absorption of almost the entire muscular substance of the right ventricle. The specimen was obtained from the body of a patient who had died suddenly, while suffering from pneumonia. The large abdominal viscera were also found in a state of fatty degeneration. A microscopic examination gave some exquisite pictures of fatty metamorphosis. ═══ Dr. Jacobi thought that the patient probably died of acute œdema of the lung, due to insufficiency of the heart's action. ═══ A discussion took place, in which Drs. Jacobi, Garrigues, Wendt, and Seibert participated, in regard to a possible atrophy of the muscular elements of the heart from pressure of the invading fat. Dr. Seibert was finally requested to investigate this question, and report to the society at the next meeting.

Chlorate-of-Potassium Poisoning.—Dr. Jacobi exhibited about half a fluid-ounce of a blackish liquid, found in the bladder of a patient who had died of acute poisoning with potassium chlorate. A complete history of the case would be given at some future time.

Carcinoma of the Lung.—Dr. Wendt presented a specimen. The left lung was the primary seat of infiltration, and the kidneys and subpleural lymphatic glands showed miliary carcinomatous infection. The macroscopic appearance was that of gray hepatization. A diagnosis was not made during life. ═══ Dr. Heineman remembered a similar case which gave the symptoms of a dry pleurisy.

Dr. Seesel exhibited a plaster-of-Paris model of the left hemisphere of the brain.

Spontaneous Gangrene of the Testicle.—Dr. Gerster exhibited a specimen recently removed from a patient. The scrotum was distended and very large. Upon making an incision, the tunica vaginalis propria was found obliterated, and the albuginea very much thickened. The substance of the testicle was changed into a coffee-colored, disintegrated, semi-liquid mass. The epididymis was normal in appearance. All the diseased parts were removed, and the patient made a good recovery.

Dr. Klotz made some additional remarks concerning a patient exhibited before the society, in January last, suffering from elephantiasis of the left lower extremity. Subsequently the right extremity became similarly affected; the surface of the diseased limb was studded with numerous necrotic patches and ulcers, probably due to arteritis obliterans syphilitica.

Ovariotomy, with Serious Difficulties during the Operation.—Dr. Noeggerath gave the history of an operation performed by him at the Mt. Sinai Hospital in October last, which presented difficulties heretofore but little recognized in the history of the operation. Three months previous to the operation the cyst was punctured and emptied of its contents. It was noticed that a smaller cyst, located at the anterior aspect of the large one, had also disappeared after tapping. In making the abdominal section this small cyst was opened, and proved to be the bladder firmly attached to the abdominal wall. The bladder was carefully stitched, and the large cyst was emptied of its contents. A very copious hæmorrhage now ensued from the depths of the large cyst, and the patient collapsed. The hæmorrhage was finally controlled, but the tumor could not be removed, as it extended far into the broad ligament, and presented numerous firm adhesions. A drainage tube was inserted, and the abdomen was closed. The patient died twenty-fours after the operation. The wound in the bladder remained closed. The urine was removed with the catheter. A similar occurrence, he remarked, had taken place in the practice of Dr. McLean, of Troy, N. Y., and in that of Dr. Thomas, of this city. These were the only cases on record in America. ==== Dr. Garrigues remarked that Olshausen described a number of cases in which the bladder was injured. ==== In reply to a question by Dr. Gerster, Dr. Noeggerath remarked that all our diagnostic means were not sufficient to absolutely prevent such accidents. An examination with a catheter was by no means sufficient to define the exact extent of the bladder. Time and future experience would probably develop more exact methods.

A stated meeting was held December 17, 1880, Dr. H. Knapp in the chair.

Embolic Infarction in the Eyelid.—Dr. Knapp presented a young man with the following history: The patient awoke one morning, and was much surprised to find a hard but painless swelling in his left eyelid. A week later he presented himself at the clinic. On everting the lid an indurated swelling became prominent, the center of which was quite soft. Chemosis of the conjunctiva was present, without abnormal secretion. The surface of the swelling was not ulcerated. Infection from any source and direct injury were denied. In a few days the softening spread from the center to the periphery, and numerous hæmorrhagic spots became visible. Resorption of the exudation was at present making good progress, with strict cleanliness as the sole treatment. This lesion was rarely met with, the terminal arteries in this region not presenting favorable conditions for embolic processes; but Dr. Knapp believed that the so-called *essential œdema* might be caused by a similar infarction taking place in the lid or orbital tissue. Dr. Knapp also showed drawings and a specimen of embolus of the retina. This lesion was first described by him. ==== Dr. Kucher referred to the case of General Radetzky, in which enucleation of the bulb was suggested for an orbital tumor, the patient finally recovering without an operation, œdema and exophthalmus disappearing under expectant treatment. ==== Dr. Jacobi remarked that the case presented might be looked upon as one of simple thrombosis. ==== Dr. Knapp replied that a thrombus near the orbit generally extended into the sinus cavernosus, whereas in his case the wedge-shaped induration, the hæmorrhagic spots, and the absence of fever, all pointed to embolic infarction. ==== Dr. Gruening remarked that Michel and Hutchinson had published cases of thrombosis of the vena centralis without fever, and he was inclined to look upon Dr. Knapp's case as one of simple thrombosis.

Ovarian Cyst with a Peculiar Diverticulum.—This specimen was exhibited by Dr. GARRIGUES. It was removed from the cadaver of a woman who died an hour after an exploratory incision into the abdomen had been made. The cyst was covered by a massive deposit of fat in streaks, and presented a peculiar elongated diverticulum, communicating with the general cavity and lined with epithelium. ══ Dr. JACOBI thought that the diverticulum had its origin in a reduplication of the skin during fœtal development.

ANGIO-SARCOMA OF THE EYELID AND TEMPORAL REGION.—These tumors, two in number, were presented by Dr. JACOBI, having been removed by him from an infant one day old. The microscope revealed a profusion of lymph-vessels.

PRIMARY CARCINOMA OF THE KIDNEY.—Dr. JACOBI presented this specimen, with the following history: The patient, fifty-three years of age, had been ailing for years past with symptoms of renal colic. A stricture was not present, and concretions had never been found in the urine. At one time pus was found in the urine, however, and pyelitis was suspected. The patient undertook a journey to southern France, but found no relief, and returned to New York in a feeble state of health, and put himself under the care of Dr. Jacobi. On examination, his temperature was 103° F., and there was slight dullness in the apex of the left lung, with extensive rhonchi. The urine contained pus, and the region of the left kidney was somewhat swollen and painful. An aspirator brought some pus to the surface, and about 300 grammes were removed through an incision. The diagnosis was now established as pyonephrosis. A drainage tube was inserted, and the abscess was washed out with solutions of carbolic acid and thymol. The patient had frequent chills, his pulse rose to 130, and a troublesome cough set in. He did not rally, and finally died of pneumonia, complicated with erysipelas in the neighborhood of the wound. At the autopsy, a renal cancer with perinephritic abscess was found. The right kidney was diseased also, as were the liver and omentum.

IMPROVED TAMPON-CANNULA.—Dr. GERSTER exhibited and explained the mechanism of a tampon-cannula devised by himself, as an improvement on Trendelenburg's apparatus. In place of the inflatable rubber bag, which was frequently a source of annoyance during an operation, the trachea was effectively plugged by means of a tube composed of small, flexible steel plates (similar in arrangement to Otis's urethrometer). By turning a screw the transverse diameter of the cannula could be increased or diminished at will. ══ Dr. JACOBI remarked that the instrument was of solid construction, not liable to get out of order, and would in all probability answer its purpose well.

REPORT ON THE QUESTION OF A POSSIBLE ATROPHY OF DEGENERATED HEART MUSCLE FROM PRESSURE OF A MASSIVE DEPOSIT OF SUBPERICARDIAL FAT.—Dr. SEIBERT, in compliance with a request made at the last meeting, submitted the following report: "The theoretical grounds on which I held that the pressure of subpericardial fat had caused atrophy of the heart muscle are the following: 1. We have, on the one side, pericardial membrane and the invading fat, which is an inactive and elastic tissue; on the other side, the blood pressure in the ventricle. 2. The blood pressure, according to Hermann, is about 83 mm. mercury in the pulmonary artery. The work of one systole in the right ventricle is about 0·175 kilogramme or 18,900 kilogrammes in twenty-four hours. 3. Between the two we have muscular tissue in a state of *partial degeneration*, and therefore very susceptible to pressure. It is evident that this pathological condition must be attributed to direct pressure, for we know that, in the so-called pseudo-hypertrophy of the muscles, the pressure of the invading fat is sufficient to produce the absorption of *healthy* and *active* muscular elements. In conclusion, I refer to the following authors and authorities on general and special pathology: G. B. Wood, "Treatise on Medicine," p. 197; Kunze, "Compendium," p. 214; Niemeyer, "Lehrbuch," p. 399; Schrötter, in Von Ziemssen's "Handbuch," vol. vi, p. 235; Rindfleisch, "Pathology," p. 197; E. Wagner, "General Pathology," p. 426.

A STATED meeting was held January 20, 1881, Dr. ZINSSER in the chair.

PRIMARY ABSCESS IN THE MASTOID CELLS.—Dr. GRUENING presented a patient, who first complained of deafness, noise in the head, and rigidity in the muscles of the neck. The skin immediately over the mastoid process was red and painful, but not swollen. A tuning-fork was plainly heard. The tympanic membrane was intact, and there was no inflammatory process in the middle ear. No improvement took place after the application of leeches and incision into the drum. November 12th, the patient had a chill, and vomited the next day. On the 16th the mastoid process was tapped with a Buck's drill, and ten drops of pus were removed. This was followed by marked improvement. Subsequently it was found necessary to incise an abscess which had formed beneath the sterno-cleido-mastoid muscle. With the exception of the persistence of some buzzing in the head, the patient entirely recovered.

DEMONSTRATION OF A URETHRAL POLYPUS IN SITU.—Dr. ZINSSER demonstrated a polypus of the bulbous portion of the urethra by means of Greenfield's endoscope and Trouvé's electric polyscope. He spoke at length of the facility with which granulations and neoplasms might be detected and removed from the urethra, and exhibited a number of small growths removed with the wire loop. ═══ Dr. KLOTZ referred to a case in his own practice, presenting symptoms of stricture. Large sounds could be passed with facility, but small ones with difficulty or not at all. By means of the endoscope a large polypus, situated thirteen centimetres from the urethral orifice, was readily seen and removed. ═══ Dr. ZINSSER remarked that such growths did not, as a rule, impede the passage of sounds. ═══ Dr. JACOBI asked why granulations and polypi were not removed with a scoop. ═══ Dr. ZINSSER replied that this method had been tried, but had been abandoned owing to the troublesome hæmorrhage and the extremely narrow passage.

RUPTURE OF THE UTERUS.—Dr. GARRIGUES presented this specimen, which had been sent to him for examination. The womb showed a longitudinal fissure of the cervix and an incomplete circular fissure of the cervix and peritonæum. The cervix was three millimetres, and the corpus uteri three centimetres thick. The fœtus was extracted with difficulty from the abdominal cavity. A small conjugate diameter was the hindrance to a natural labor in this case.

SARCOMATOUS CYST OF BOTH OVARIES.—Dr. GARRIGUES exhibited a specimen which had been removed from the body of a woman, aged seventy years, who died suddenly from collapse. Death probably took place from rupture of the cyst into the abdomen.

POLYPUS OF THE INTESTINE.—Dr. GLUECK presented this specimen. The patient was a lady, aged twenty-nine years, who had been ailing for a number of years, suffering frequently from nausea. Five days before death, she complained of pain in the right hypochondrium, notwithstanding which she attended a dance. The pain became very severe, she vomited several times, and her pulse became feeble and rapid, without any elevation of temperature, and she died soon. The autopsy showed a few old peritonitic adhesions. The intestines were filled with blood (about 1,000 grammes) as dark as pitch. A large polypus, taking its origin from the pyloric valve, was found, and a smaller tumor in the jejunum; also a number of erosions in the ascending colon. ═══ Dr. Wendt remarked that the tumor was probably an ordinary mucous polypus, and must be looked upon as the source of the excessive intestinal hæmorrhage. ═══ Dr. Adler took it to be a "mixed" polypus, since it took its origin from the pyloric valve, which was composed of connective and mucous tissue. He was therefore inclined to term it an adeno-sarcoma, and it was well known that such tumors were a frequent source of hæmorrhage. ═══ Dr. Jacobi remarked that, to judge from the appearance of the blood in the large intestine, the hæmorrhage came from above. In case of hæmorrhage from the colon, fresh blood would be found. Hæmorrhage into the duodenum would probably excite peristaltic action and rapidly carry the blood through the intestine.

Dr. Wendt exhibited a specimen of atrophic kidney, with extensive hæmorrhagic infarction and embolic closure of one of the arterial vessels. He also showed a number of tumefied lymph glands removed from the body of a patient who died from pseudo-leucæmia. The spleen presented unmistakable signs of amyloid degeneration.

Tripolith, a new Material for Splints.—Dr. Gerster showed a splint made from tripolith. This material became hard somewhat sooner than ordinary plaster, and splints made with it were at once firm and light. Langenbeck's statement, that tripolith splints remained hard and firm even after immersion in water, was not verified in this instance, as the material became soft and useless in a short time; probably the tripolith was slightly altered and deteriorated during its passage over the water. The dentists' plaster of Paris used in the German Hospital and Dispensary was so excellent in quality that it was not likely to be superseded by any other material.

Dr. A. G. Gerster, *Secretary*.

Reports on the Progress of Medicine.

QUARTERLY REPORT ON SURGERY.

No. VI.

By CHARLES B. KELSEY, M.D.,
SURGEON TO THE EAST SIDE INFIRMARY FOR DISEASES OF THE RECTUM.

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9. M. Verneuil bases a *new treatment of malignant pustule* on the anatomical fact that it is divided into three zones: 1, A central gangrenous portion; 2, an intermediate portion, on the surface of which small vesicles are found; and, 3, a zone of œdema. Up to the present time all attempts at cure have been directed toward the central portion, and the others have been left to their own course. Occasionally leeches have been applied to the outer zone—a practice which Verneuil strongly condemns. It is this third zone which he attacks with hypodermic injections and caustics. His treatment consists in exciting a revulsive action in the intermediate portion by punctate cauterizations, in destroying the gangrenous portion, and in trying to disinfect the outer zone by injections of iodine.

12. Dr. Ogston has presented a report upon *micro-organisms in surgical diseases* to the Committee of the British Medical Association. The report is long and exhaustive, at the same time that it deals with many practical questions which are at present agitating the surgical world. The results regarding micrococci in inflammation are summed up as follows: Cold abscesses contain no micro-organisms, and their pus is harmless. Acute and pyæmic abscesses always contain micrococci. Pus, after its micrococci have been killed by high temperature or carbolic acid, is harmless. Pus containing micrococci is resisted by animals if the dose be minute, or if it be injected into the peritoneal cavity. Doses of one or two minims injected into the subcutaneous tissue may cause death by blood poisoning, or may cause sphacelus at the site of the injection, or may be resisted by an unusually insusceptible animal. As a general rule, such doses produce acute

inflammation, accompanied by blood poisoning, and ending in abscess. Having studied the connection between micrococci and acute abscess, the field of inquiry was extended to cover other forms of suppuration as found in wounds, ulcers, pustules, and catarrhs. This was especially needful, as one of the most recent investigators of the subject, Mr. Watson Chyne, had arrived at the conclusion that the ordinary forms of micrococci were harmless. What was observed agreed with the facts elicited by him, but rendered a revision of his conclusions necessary. Examinations of pus in the sputa of bronchitis (one case), in phthisis (two cases), in pustules (nine cases), in gonorrhœa (four cases), in soft chancres (one case), in sycosis (one case), and in malignant pustule of the lip, resulted in micrococci being found abundantly present in all save one case of common acne, running a very chronic course, where they were not found in about half the pustules examined. In gonorrhœa and soft chancre, they existed in enormous numbers, along with other micro-organisms, and gradually became less numerous as the disease approached cure. In the malignant pustule of the lip, they were the only organisms detected; and, when injected into a wild mouse, killed it between the second and third day with all the symptoms of blood poisoning, the animal having large numbers of them in its blood, and presenting, at the site of the injection, a knot of infiltration without suppuration, where the coccus infiltration was extremely dense and well marked. A set of test examinations of normal fluids (blood, urine, etc.) and tissues fully confirmed the now generally received opinion that no micro-organisms exist in healthy human structures; and another series of examinations of pathological fluids yielded one unvarying result, viz.: that micrococci never were present in them where suppuration was absent. Even in normal lochia (two cases), where enormous numbers of all four forms of micro-organisms except spirilla exist, from the ninth hour after delivery onward, without raising the pulse and temperature above normal, their appearance is the signal for a change of the red serous discharge into a liquid which becomes more and more purulent in its nature. In two cases of puerperal fever, where the lochia were examined, the micrococci existed in enormous numbers, and continued present longer than usual, gradually diminishing as the case ended in recovery. The remaining series of observations, ninety-six in number, were devoted to the study of wounds and ulcers in every situation and of every sort. The results were singularly corroborative of those obtained by the injection of the pus of acute abscesses. The results of the observations on wounds and suppurations other than acute abscesses may be summed up thus: Suppurating wounds contain micrococci, whose numbers and activity are proportionate to the intensity of the suppuration. Listerian dressings prevent micro-organisms from gaining access to wounds. Micrococci in wounds withstand most antiseptic applications. Where no micrococci are present in wounds, no pus is produced; the discharge is serous. Micrococci exist wherever pus occurs, save in chronic suppurations, such as cold abscess, chronic acne vulgaris, etc. Micrococci, in man, produce the same varying effects as in animals: they may produce blood poisoning without suppuration; they may cause suppuration; or they may be resisted by strong individuals under favoring circumstances. Lastly, there are possibly micrococci that do not produce suppuration. In the preceding parts of the report it is stated that there exist statements imperatively requiring further elucidation, and that even appear mutually contradictory. How can it be explained that micrococci are so injurious when injected (as they are found in the pus of acute abscesses) into the subcutaneous tissue of animals, and yet are so harmless on the surface of wounds and ulcers? It is no doubt possible that there exist species of micrococci precisely similar to one another in appearance and growth, and yet widely different in the effects they are capable of producing. The behavior of a wall of healthy granulations, and its power to prevent their penetration in such numbers that the system is incapable of throwing them out, plainly forms a weighty factor in the solution of the difficulties. But these difficulties are rendered greater by an observation that has been reserved for special mention. The pus from acute abscesses was found uniform in producing, with the reservations already stated, serions effects in the animals into which it was injected; but pus from wounds was not identical in its effects—sometimes an abscess resulted, sometimes it did not; and it was noticed that, in marked contrast to the pus of abscesses, that of wounds, though rich enough in micrococci, was with difficulty able to produce an occasional suppuration. The results of the experiments with cultivated micrococci seem to offer the true solution of the difficulty. In all, one hundred and eighteen cultivation experiments were carried out. From them it was learned that these organisms grow with difficulty when exposed to the action of the air, and in this imperfect condition do not reproduce themselves with the rapidity necessary for the exhibition of noxious influences. They probably also lose for a time, when grown under such circumstances, a considerable portion of their activity and virulence. When placed under more favorable conditions, they speedily reacquire their former powers of inducing disease. This seems also to explain their being so prone to cause blood poisoning in deep and sinuous wounds, as in those produced by a compound dislocation or by removal of the thyroid gland. To sum up: Micrococci do not produce putrefaction. They develop best when removed from the atmosphere. They are able under suitable conditions to give rise to blood poisoning, to acute inflammation, and to suppuration. The more these things are reflected upon, the more pregnant they become with explanations and suggestions regarding many of the obscure facts in connection with the processes of inflammation and blood poisoning. They tend to confirm the supposition of Kocher that acute inflammations are due to micro-organisms; they suggest many probable hypotheses to explain the difficulties occurring in the study of pyæmia, septicæmia, gonorrhœal rheumatism, etc.; the different virulence of gonorrhœal balanitis and gonorrhœal urethritis; the occurrence of mammary abscess and pelvic suppurations in childbed; the causes and varieties of dissection and poison wounds; the success attending the open-air treatment of wounds; the causes of surgical fever; and many other features of disease that it would be premature to discuss here. It is not intended to be conveyed by anything that has been said that the micrococcus is the only organism which produces such results: the other organisms must be investigated in their turn, and much yet remains to be done, for the subject is only in its infancy.

14. M. Boeckel has employed *a simplified Lister dressing*, which he has found to be equally efficacious and much more convenient and generally applicable than the original. The spray is not entirely dispensed with, and in hospital practice he much prefers to use it, but in private practice he often substitutes for it frequent washings with carbolic acid, and has equally good results. The principal element in the antiseptic dressing, the carbolized muslin, he has modified in the following particulars: A covered jar is filled with the following solution: water, 50 parts; alcohol, 5 parts; glycerine, 5 parts; carbolic acid, 3 parts. The pieces of muslin, cut of convenient size, are immersed in this, and allowed to remain for about a week. As some are removed for use, others are placed in it to undergo the necessary soaking, but he believes that in case of necessity, in an ambulance on the battlefield, for example, an immersion for an hour or two would be sufficient to destroy all germs contained in the cloth. If a cloth soaked in this five-per-cent. solution is applied directly to the wound, it cauterizes the epidermis and gives rise to the usual signs of carbolic-acid poisoning in a slight degree. Therefore, at the moment of applying it, it is dipped into warm water and squeezed out, to remove the excess of carbolic acid, enough still remaining to secure the necessary antisepticity. When a free suppuration is anticipated, or where the dressing should remain several days in place, a piece of muslin dipped into warm water is applied next to the skin, and several layers of prepared cloth are placed over this to neutralize the pus without the risk of carbolic poisoning. The edges of the muslin are guarded with cotton to filter the air, and all is covered with an impermeable fabric fastened by a band of softened muslin containing the preparation of starch. On drying, these bands adhere well to the pieces of the dressing, as well as to the skin, and are not disarranged by the patient's movements. The macintosh of Lister, which is expensive, is replaced by sheets of gutta-percha, or even by ordinary paper changed to parchment by soaking in sulphuric acid. Paper dipped into oil or paraffin answers the same purpose. The paper is less solid than gutta-percha, but may be used in two or three thicknesses. It is very cheap, and may be destroyed after each dressing. The silk is necessary to cover large wounds and preserve them from the irritation caused by the carbolic acid. It should be perforated to prevent the accumulation of pus beneath. In small wounds, the muslin may be placed next the skin. The author has used this dressing in sixty capital operations, of which he gives the details, and claims for it results fully as good as those obtained with the more complicated dressings.

23. M. Le Dentu, at a recent meeting of the Société de Chirurgie, reported several cases of *epithelioma of the tongue* which had been under his own care, and introduced an interesting discussion as to treatment. In his first case, the return was almost immediate, and death followed in two months; and a second patient was carried off by a severe hæmorrhage. A third was attacked with an epithelioma with very fœtid discharge, having every appearance of an ulcerated gumma, which rapidly involved the anterior two thirds of the organ, without any appearance of enlargement of the ganglia. In this case, the tongue and the anterior pillars of the fauces were removed, and the operation succeeded remarkably well, but there was a return of the disease in the neighboring ganglia in four months. In another case the patient suffered from both lingual and buccal psoriasis, and at the same time from a true epithelioma beginning on the right side, one centimetre from the tip, and ending two centimetres from the base. For this, the patient had been submitted to a thorough anti-syphilitic treatment. The tongue was removed with Paquelin's cautery. The operation was done in 1876, and up to the present time there had been no return. The diagnosis was confirmed by many, among them M. Verneuil. In the hands of M. Le Dentu, the operation has always had one result, to render life more supportable, to do away with the intolerable pain, and to prolong life generally for about one year. ═══ M. Perrin had removed six epitheliomata of the tongue during the preceding eleven years. In all, the disease had been circumscribed, limited to one border, and without glandular involvement. The operations had always been through the mouth, sometimes with the écraseur, sometimes with Paquelin's or the galvanic cautery. The result had generally been good, and in some cases the relief had extended over two or three years. In one case he had seen a psoriasis change into an epithelioma. He made it a rule not to operate when there was any enlargement of the ganglia, and in those cases where the disease was superficial and not interstitial. He operated through the mouth, and preferred the écraseur to the cautery. ═══ M. Després believed that the cases in which life was prolonged for any great length of time were exceptional, and had found no instrument which equaled the écraseur of Chassaignac. For passing the cord he had found nothing better than an ordinary trocar and cannula, with which he transfixed the organ, taking care not to wound the vault of the palate. ═══ M. Trélat believed that a long period of immunity might be gained, and referred to eleven cases in which the disease had not returned for three years, which time had been passed by the patient in comfort. ═══ M. Verneuil thought the question, whether an operation might be attempted when the ganglia were involved, depended for an answer on the location of the glands. For example, if the whole cervical chain were affected, the operation would be useless, but in most other cases the surgeon should operate. In the same manner as operations were done in cancers of the breast with involvement of the ganglia as a palliative measure, so they might be done in cancer of the tongue. It was true also that most cancers of the tongue might be removed through the mouth, and, if he (Verneuil) preferred the supra-hyoid incision, it was only because it furnished greater facilities for reaching and removing the affected ganglia.

30. Drs. Browne and Grant give an exhaustive and valuable study of cases of *tuberculosis of the mouth and throat*, and reach conclusions which are opposed to those of many of the authorities who have before written on the subject. The paper is based on a study of five cases, which are considered as typical, and which are graphically reported and well illustrated. The clinical evidence in favor of a possible primary occurrence of tubercle in the throat is of a twofold character: first, the not unfrequent account given by patients of the occurrence of loss of voice, laryngeal pain, and difficulty of deglutition prior to the appearance of any symptom of pulmonary disease; and, second, that which is derived from the fact that the disease may be diagnosticated in the larynx when the lungs are still healthy, or, at all events, as was done in several of the cases reported in this paper, at a time when the eye could distinguish the visible changes in the larynx long before the changes, if any, in the lungs were appreciable to the faculty of hearing. In one case the throat symptoms existed for upward of two years before the occurrence of chest symptoms. An invariable element in the etiology of the disease is a low state of vitality, either hereditary or acquired, with resulting feebleness of recuperative power. Less invariably there is some local irritation, such as diseased teeth (case 5) or over-use of the vocal organs (case 3). The symptoms are emaciation, night sweats, aphonia, cough with profuse laryngorrhœa of semi-purulent character, pain only in deglutition, more marked in the case of fluids, with tenderness of the larynx on pressure. In cancer the cachexia is more marked, the pain is constant and independent of functional acts, as well as dependent on deglutition, being more intense in the case of solids than fluids. Syphilis gives a hoarse rather than an aphonic character to the voice; is, on the whole, free from pain, and has other symptoms of its own sufficiently distinctive to afford a reliable guide. Anchylosis of the crico-arytenoid articulation, and paralysis of the laryngeal muscles, as from pressure on the nerves supplying them or following diphtheria or other diseases, are unaccompanied by general emaciation, unless, in the case of nerve pressure, the paralysis be due to a malignant growth. Thus, in a general way, the symptoms, apart from the physical signs, give a fair clew to the presence of laryngeal phthisis. A certain diagnosis can, however, be made only with the laryngoscope; and in asserting positively that this can be done the authors take very advanced ground in opposition to Von Ziemssen, Poore, Cohen, Mackenzie, and Heinze. They believe that in no other disease of the larynx, except new growths, can the diagnosis be made so certainly with the laryngoscope, and that it is not dependent on the condition of the chest, but may be made before any pulmonary signs are to be detected. They hold that, given the characteristic gray semi-solid infiltration of the epiglottis, aryteno-epiglottic folds, or both—an appearance considered almost invariably the precursor of ulceration—there is a form of ulcer superimposed on the swollen tissue, which is distinctly characteristic, and whose incurability may be foretold. In the absence of the thickening, the character of the ulceration is hardly less typical. It is in itself essentially one of that class in which there is absence of healing owing to defect of action. The floor of a tubercular ulcer is pale and granular and slightly depressed; the margins are fairly well marked, but not deeply excavated; the surrounding parts are pale and languid; and there is an appearance of a spreading process of erosion very comparable to that of the nibbling of a small rodent animal. This is due to the confluence of small ulcers produced by the slow incurable inflammation of the mucous and closed follicles of the mucous membrane, and also to the ejection of minute tubercles which have worked their way to the surface. Very different is this from the punched-out, areolated excavation of tertiary syphilis, and from the angry, hyperæmic, thickened walls of a cancerous ulceration with its accompanying deformities. The temperature and the condition of other organs afford collateral evidence of importance. The prognosis of the affection is unfavorable, as regards both recovery and duration of life. The fatal result is greatly hastened by the difficulty of swallowing. The indications for treatment are to counteract the general phthisical processes, to allay the cough, relieve the pain in swallowing, heal the ulceration, check perspiration and profuse laryngorrhœa, and administer suitable nourishment.

29. Dr. Shurly's *plea for the uvula* is worthy of being heard. The idea that the uvula can not rest upon the base of the tongue, or touch the epiglottis, without giving rise to all that train of symptoms known as hawking, tickling cough, etc., he believes preposterous and easily disproved by noticing how often in persons complaining of nothing wrong the uvula will be found resting upon the base of the tongue, the pharynx, or even the epiglottis. In cases where the mucous membrane is very much relaxed, hanging down as a club-shaped, pellucid pendant, and aggravating all the symptoms, it is necessary to clip it, but not the muscle. The muscle should never be cut except for real organic change, such as hypertrophy or neoplasm. This appendix to the soft palate has certain well-known functions, and probably others not as yet understood, but at all events the author enters a very forcible protest against its being removed whenever it is found relaxed.

31. M. Schmidt divides the *treatment of laryngeal phthisis* into two parts: that of the lungs and that of the larynx. The latter demands complete silence on the part of the patient. In nourishment, everything of an irritating character should be avoided, and in grave cases a semi-solid diet is preferable to one entirely fluid. The medical treatment consists in the employment of the antiseptic method. Blind cauterizations and active topical applications must be avoided. The author uses them only in the last stage of large ulcerations of the epiglottis, to form a protective which shall relieve pain for a few hours. In cases of extensive granulations, which prevent the cicatrization of ulcers, he employs feeble solutions of caustics, but only to aid cicatrization, and for a limited time. The antiseptic method as applied to the larynx consists in inhalations of phenic acid and applications of glycerole of creasote. The author has found the benzoic acid contained in the balsam of Peru to be a remedy of great value, used by inhalation three or four times a day, continued for a long time—from a month to a year. It is well to change the inhalations every two months, and their effect will be found to vary with the case. In some cases the tubercular infiltration will disappear with or before the cure of the ulcerations; and in most cases it will be found necessary to employ other measures against the infiltrations. The best method (original with the author) is the use of free scarifications of the whole posterior wall of the larynx in its upper part. They should be resorted to in any case where the infiltration does not decrease in three or four weeks. Most practitioners fear to make such wounds in the larynx of a phthisical patient, but the author is convinced that they are not at all harmful, but, on the contrary, contribute much toward the favorable progress of the case. The incisions should be as large, and are just as appropriate, in chronic as in acute œdema and infiltration of these parts. It is even more necessary that they should be large, since chronic œdema does not resolve as quickly as acute, and the wounds should remain open several days. At the end of three or four days, unfortunately, even these will close, but the slight punctures made with a knife are agglutinated in a few hours. They are made by the author with a pair of scissors, shaped like an amygdalotome, which is introduced closed behind the epiglottis, then opened and one blade passed into the larynx, while the other goes into the œsophagus. The posterior wall of the larynx is thus caught between the two blades, and as it is raised in the act of vomiting it is cut. The pain is not great, and is of short duration. Generally the bleeding is only slight, and it is rare that a second incision is necessary. The author has never seen affections of the epiglottis of this nature cured, except when the ulcerations were superficial, and here also the free scarifications, made with a knife, act beneficially. The malady is not considered incurable, and with proper methods and patience good results may be expected.

40. Dr. Mastin, from a study of a large number of cases of *tracheotomy in croup*, has arrived at the following conclusions: 1. That procedure is the best which dispenses with the cannula, or any mechanical appliance whatever, placed within the trachea, and hence the excision method, or separating the wound by wires or threads passed through the lips of the divided trachea, is to be preferred, and appears to be based upon the soundest surgical principles. 2. Tracheotomy *proper* is to be selected in all exudative inflammations of the windpipe. 3. The low operation is preferable, on account of the greater diameter of the trachea at its middle in children, the upper portion of that tube, near and at its juncture with the larynx, being more contracted in early life; and, again, the farther down the opening, the more apt it is to be lower than the obstructive exudation. 4. The recumbent position of the patient, with the neck raised and somewhat extended, offers the easiest position for operating. 5. An anæsthetic is most desirable, and preference should be given to chloroform, on account of its less irritating properties. The condition of the patient in the first stage being favorable for the use of an anæsthetic, this is readily administered, and but a small quantity is required to produce unconsciousness, which state should be just reached; for, if reflex action is wholly abolished, the surgeon loses the valuable aid of cough in notifying him of blood passing into the trachea, and in expelling it therefrom. In a word, an obtunding of the cutaneous sensibility is all that is required. 6. The skin wound should be of sufficient length to permit of easy recognition of the underlying tissues, and for a proper dissection in reaching the windpipe. 7. As much rapidity as is consistent with care and safety should be used in executing the operation. 8. Make the operation as nearly bloodless as possible; therefore, lay aside the bistoury after the first incision, and, by means of the knife handle or director, scratch or tear a road to the trachea, staunching all oozing before incising the tracheal tube. 9. The opening in the windpipe should be covered with a thin gauze, and a moist atmosphere with a moderately warm temperature should be maintained in the apartment. 10. Most careful nursing, by an experienced attendant, and frequent cleansing of the edges of the wound, or the inside cannula, are indispensable. 11. When the acute symptoms have subsided, make frequent tests of the laryngeal respiration, and remove the cannula as soon as breathing can be carried on by the larynx. Hence the rule should be to remove the cannula at the earliest moment. 12. The cannula should always be double, the tube revolving in the neck shield, of a short curve, beveled edges, medium length, and a diameter sufficiently large to fill but not distend the trachea. 13. Advanced asphyxia, even where death has apparently taken place, should not deter the surgeon from operating. 14. Marked attacks of dyspnœa, which are found to be unconnected with obstruction of the cannula, require an early and thorough search for casts or membranous plugs below the opening.

43. Mr. Golding-Bird has adopted a new plan of *mechanical treatment of croupous membrane after tracheotomy*, which consists essentially in discarding all tracheal tubes and substituting for them an instrument of his own, with which to keep the tracheal wound open. The instrument is something like a nose speculum, except that the blades are moved, not from a hinge, but along a sliding bar, and that it is self-retaining. When, after tracheotomy, evidences of membrane below the wound are visible, this dilator is inserted fairly into the trachea and there retained. The author describes his method of removing membrane through the tracheal wound. If natural efforts have failed, the surgeon should remove with suitable forceps all that can be seen or that is coughed up to the opening. Membrane may now be searched for below the wound. Minute pieces of sponge held in curved forceps, or feathers, can be passed down; but the author uses a brush like a rather large pipe-cleaner, on strong but flexible steel wire. Before use, they should be put into hot water. In a child, they may be passed three inches from the wound—that is, well into the first division of the bronchi—and, if rotated sharply at the moment of retraction, will often detach and draw up large pieces of membrane. When mucus rather than membrane obstructs, feathers and minute sponges are preferable. If the air passages are thus rendered free, the patient can be left again to the nurse, with instructions to mop out frequently, with small pieces of sponge held in artery forceps, anything coughed up to the wound; and also, by reflected light, to pick out any visible pieces of membrane. At the same time, the usual adjuncts of alkaline and other sprays should be employed. Hot flannels can be placed over the dilator. There is no tube to get blocked or to be cleansed by the nurse, and the dilator need not be touched for days. It becomes bedded in the granulations, and gives no pain, irritation, or discomfort. Its use has seemed to have no influence in producing the accidents of pneumonia or pleurisy, and the chances of death by suffocation are much diminished by its use.

51. M. Boeckel presents a number of cases of *ligature of large veins in their continuity* with the catgut ligature, and arrives at very favorable conclusions regarding its safety and its advantages over other ligatures. It is held that most of the accidents which formerly attended the ligature of venous trunks—phlebitis, suppurating thrombus, and pyæmia—were natural consequences of the inflammation and suppuration provoked by the ordinary silk ligature, and that secondary hæmorrhage itself owned no other cause. Thanks to the catgut ligature and the antiseptic method, these accidents need no longer be feared. The author holds the following opinion as to the action of the ligature and the antiseptic method: The inner coats of the vessel are divided by a moderate constriction. The external, instead of ulcerating and mortifying, as in the case of the silk, resists by the fact of the resorption of the catgut. Toward the third or fourth day, the latter is swollen and softened; about the tenth day only the knot can be found; and after twenty or thirty days there is no longer any trace. The adversaries of the catgut reject it on the ground of this rapid absorption. But the obliteration of the vessel is effected by the time the ligature is softened, and, moreover, the external tunic remains to support the inner ones. Secondary hæmorrhage, with a ligature well made, is therefore less to be feared than with the silk, and, as a fact, while it used to be the rule, it is now a great exception. It is useless to add that the catgut should be of good quality. Immediate union is possible after the antiseptic ligature of a large vein, and the Lister dressing is not only harmless but necessary to protect the denuded vessel, and prevent the softening of the thrombus. In every case which the author reports, where it was possible to bring the edges of the wound together, a cure was obtained by first intention. The thrombus does not soften or suppurate, except in cases where the wound is left open, and even then it does not always do so. Another result of the application of the antiseptic method is the possibility of ligaturing with safety large collateral branches very near to the parent trunk; for an immediate union may be counted on. The author gives several cases in which he has ligatured large branches of the femoral and axillary, within two or three millimetres of the trunk, without accident; but he does not carry this idea to the point of applying a ligature to a lateral wound in the trunk itself,. believing that, in spite of some cases which have resulted favorably, the old rule of complete division and ligature is the safer. His conclusions may be summed up in the following propositions: Catgut of good quality assures the obliteration of large venous trunks. It constitutes, as for the arteries, the best agent for ligating large veins. Thanks to Lister, it permits of the practice of immediate reunion and ligature of collateral branches very near to the parent trunk.

60. Professor Billroth has successfully performed the operation of *exsection of a cancer of the pylorus*, which the surgical world has been looking forward to for some years. The case was that of a woman, aged forty-three, who had suffered from the usual signs of the disease for more than a year, and who was in a greatly emaciated condition. The tumor could be felt slightly to the right of the median line and freely movable. The operation was performed with all the antiseptic precautions, and in a room in which the temperature was elevated and the atmosphere charged with moisture. Before opening the abdomen, the stomach was washed out, and then the tumor was drawn out of the abdomen through an incision eight centimetres long. The disease involved the pylorus and about one third of the stomach. The greater and then the lesser omentum were ligatured and cut away from the tumor, and the whole stomach was divided across at a short distance from the disease. The duodenum was entirely cut across. The large wound in the stomach was then sewed up, beginning at the greater curvature, until an opening was left of the same size as that in the duodenum. The latter was then drawn into the former and secured. Fifty-four carbolized silk sutures were used. There was very little hæmorrhage throughout the whole operation, and nothing was allowed to escape into the peritoneal cavity. The operation was followed by no unfavorable symptoms —no fever, pain, or vomiting. Ice was given by the mouth for the first twenty-four hours, and, after that, milk in small quantities. On the eighth day, more solid diet was allowed. An interesting account of the operation will be found in the "Boston Medical and Surgical Journal" of March 10, 1881, by Dr. Mixter, who was present, and with it a history of the operation, as follows: In 1810 Merrem published a work on the subject, giving the results of his experiments on dogs, two out of three having survived the extirpation of the pylorus and the sewing together of the stomach and duodenum. In spite of these results, the operation was not attempted on man, and, though surgeons of different nationalities investigated the subject, no material advance was made until Lembert discovered the true method of uniting all wounds of the intestinal tract—namely, opposing the serous surfaces. After this, recovery after sewing up intestinal wounds became more frequent. In 1871 Billroth excised a part of the œsophagus in a large dog, and the operation was followed by recovery. Czerny first performed this operation on man, with good results; and this was shortly followed by the experiments of Gussenbauer, Winiwarter, Czerny, and Kaiser in resection of different portions of the intestinal tract in dogs. These operations were performed with antiseptic precautions, and were very successful. In one case the whole stomach was removed, and the œsophagus was united to the duodenum with good result. In 1877 Billroth operated on a gastric fistula following an abscess, by opening the abdomen at that point, excising the thickened, adherent edges of the gastric opening, sewing up the wound, and returning the stomach to the abdominal cavity. The patient made a good recovery. In 1879 Péan first resected the pylorus for carcinoma, in a patient who was greatly exhausted by the disease, and who died on the fourth day.

74. M. Bouilly enters into an historical study of the operations of *enterectomy and enterorrhaphy*, or the resection of a portion of intestine and the union of a divided intestine. Regarding the operation of removing cancerous portions of the bowel, he believes the question turns upon the existence or non-existence of complete obstruction, and then upon the possibility of overcoming the obstruction by means of colotomy. The cases of excision are given, and, though the possibility of the operation is proven, its advisability is not. The manual procedures of the operation are given in full. The extreme limits of the disease having been recognized, the bowel should be occluded above and below by ligatures or by forceps. The loop of intestine is then cut, after having applied a circular ligature to the mesentery at the place cut out. The two ends of the intestine should be washed with great care with a solution of carbolic acid, so that all fecal remains may be removed. The removal of a considerable portion of the bowel necessitates in certain cases the removal of more or less of the mesentery. After stopping the hæmorrhage, the two edges of the mesentery should be brought together with a few points of suture. The suture of the intestine itself should be done after the method of Lembert, preferable because of the simplicity of its application. The needle should be round and not angular, and the suture should be of fine catgut. The number of points of suture may vary from eight to twenty, according to the circumference of the divided intestine. After turning in the edges so as to bring the serous surfaces in contact, each suture is fastened and cut off close. At this moment there will remain a space between the two edges of the divided mesentery, which may be closed by one additional point of suture. The difficulty will be found greatest when it is necessary to join a piece of bowel of large circumference with a small one. In this case a longitudinal fold may be made in the larger one. After reduction of the intestine, its immobility must be secured by opium injections, absolute diet, and iced champagne to relieve vomiting; and at the end of a week the bowels may be induced to act by enemata of warm water.

76. M. Kœberlé has reported perhaps the most successful case of *resection of the intestine* which has yet been recorded. The patient was a girl, twenty-two years of age, who had suffered for a long time with symptoms of intestinal obstruction, though the symptoms were not such as enabled him to arrive at any satisfactory diagnosis as to the exact pathological condition. As the trouble was steadily increasing in severity, however, and the patient losing ground from suffering and malnutrition, an exploratory incision was made in the median line. Four cicatricial contractions were discovered in the small intestine, involving between them about two metres of the bowel, and the whole affected portion was consequently removed rather than retire from the operation and leave the patient to certain death. This result was a perfect success, and from this case and the analogous ones which the author has studied he draws the following conclusions: 1. Resection of the small intestine may be done to a considerable extent without interfering in any appreciable degree with digestion. 2. Practiced under suitable conditions, the operation is to be considered as perfectly legitimate. 3. The resection may be performed by bringing the divided ends directly into apposition and closing the abdominal wound; by forming an artificial anus and doing a subsequent enterotomy; or by making an incomplete union of the intestine combined with artificial anus. The second and third procedures expose to less subsequent danger. 4. Resections of fibrous and cicatricial strictures, which are probably more frequent than is generally supposed, may cause a radical cure, and the same is the case with epitheliomata. On the contrary, resection of cancerous obstructions gives only temporary relief, and at a great risk. 5. By proper diet after the operation the risk of fecal extravasation may be reduced to a minimum, and the best diet for this purpose is one containing as little fluid as possible. 6. By introducing liquids per anum, and drink in the same way, water is absorbed as by the mouth, and there is no sense of thirst; the flow of intestinal fluids is less considerable, and the patient is more comfortable.

77. Mr. Barker's *improvement in Dupuytren's operation for artificial anus* consists in closing the fistula, after having removed the spur of mucous membrane, with a rubber strip introduced into the bowel through the artificial anus and fastened in position against the internal orifice of the fistula by a wire suture through the skin and abdominal wall. [The poor success of all operations for closing an artificial anus is well known, and indeed constitutes the greatest objection to the formation of such openings by the surgeon in any case. Although Dr. Barker's case turned out successfully, we should be inclined to doubt the agency of the india-rubber valve in producing the result, though the idea is a good one and worthy of further trial. In this particular case the valve does not appear to have accomplished the main object intended, that of preventing the escape of fæces through the fistula, and the union was completed only after it had been removed. The details of the operation are simple. The projecting spur of mucous membrane which obstructs the passage from the bowel above to the bowel below the fistula is removed, as Dupuytren proposed, by seizing it with some kind of compressing instrument and allowing it to slough off. A thin and flexible strip of rubber, about one and a half inches long by five eighths of an inch broad, is then inserted through the fistula in such a manner as to lap up against its internal orifice, and is secured in this position by a single wire stitch at each end. The object is to allow the rubber to remain till the fistula is closed, and then by cutting the stitches to allow it to pass down the bowel. In the case recorded it answered the purpose of preventing the escape of fæces very perfectly for the first few days, after which there began to be leakage, and it was removed. The fistula, however, went on to complete closure.]

78. Billroth has added one more to the number of cases of *excision of cancerous stricture of the sigmoid flexure* and the formation of an artificial anus in the groin. The patient was a man, twenty-eight years of age. The operation was done antiseptically, and the incision was that employed for left inguinal colotomy. The tumor involved the lower half of the sigmoid flexure, and the mesentery was adherent to it and involved in the disease; there was also considerable infiltration behind the growth. The upper end of the bowel was attached to the skin, and an artificial anus was formed in this way. The patient died about thirty-six hours after the operation, with incipient diffuse peritonitis. Gussenbauer performed an operation similar to this in 1879 ["Ztschr. f. Heilk.," Prag, 1880], and since that time the man has had no return of the disease. Two years previously he performed the same operation, the man dying in fifteen hours, of "acute sepsis." Czerny, of Heidelberg, also has performed the operation once ["Berl. klin. Woch.," 1880, No. 45], the patient living six months in comfort before the return of the growth.

98. Trendelenburg first performed *temporary resection of the olecranon for facilitating operations on the elbow joint* in 1878, and a second time in 1879, and both cases were published in the "Arch. f. klin. Chir.," 1879, Bd. xxiv, Hft. 4. One month later, Völker described the same operation, in the "Dtsch. Ztschr. f. Chir.," 1880, Bd. xii, Hft. 6, though there were some minor differences in the manner of its performance. Trendelenburg proposed the operation for the purpose of facilitating partial resection of the elbow joint in other cases than those of caries. Völker performed it in a case of complete luxation of the joint outward, and recommended it for the partial resection of the joint in traumatic cases. The operation now reported by Trendelenburg was for a complete dislocation of both bones of the forearm backward. He recommends that the incision through the skin and that through the capsule of the joint should not be on the same level, but that the former should be far enough away from the latter to leave a flap of integument as a covering, and give the latter the character of a subcutaneous wound. In this way the two wounds will approximate each other only in the region of the epicondyle, and at this point the drainage tube may be inserted. The olecranon is best divided with a sharp chisel.

109. M. Nepveu has made a study of cases of *neuritis in stumps*, and particularly of ascending neuritis, with the following results: An ascending neuritis in a stump may take on two very different forms—one simple, the other complicated with myelitis. The simple form may be accompanied by persistent neuralgia or by trophic troubles in the stump. The form complicated with myelitis may present itself under two different aspects—sometimes it attacks the superior extremity on the same side as the stump (ascending neuritis and unilateral myelitis); sometimes the myelitis is transverse, and then the phenomena of paralysis of the bladder, of paralysis and neuralgia, or of contracture of the lower extremity on the opposite side will supervene. Myelitis may be followed by sudden death. It may be cured, as in a case observed by the author. As a prophylactic, M. Verneuil has recommended the resection of the nerve trunks to a certain extent at the time of the amputation. This operation would probably have the effect of diminishing the number of cases of neuritis of both kinds, ascending and localized, in those who had submitted to amputation. Reamputation and section of the nerve have been employed with varying success, but surgical intervention has succeeded in only three cases, and has failed in as many others.

QUARTERLY REPORT ON DERMATOLOGY.

No. V.

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8. Köbner's case of *lichen ruber cured by subcutaneous injections of arsenic* was that of a man suffering from an almost universal eruption of dark-red, shining, polygonal papules, some of which were covered with fine scales, while others presented a central depression. The lesions were disseminated over certain parts and crowded together elsewhere, especially on the flexor aspect of the extremities. On the sides were diffused, red, and uneven patches. The thighs were free, but the penis showed lesions resembling those of a miliary papular syphilide. The patient was thin and weak, and suffered extremely from an intolerable pruritus. To produce a rapid effect and to obviate the necessity for large and long-continued doses of arsenic by the mouth, a mixture of Fowler's solution, one part, and distilled water, two parts, was injected beneath the skin. The very first injection, of about five minims, relieved the severe itching, and gave the patient a quiet night. As the patient was unable to visit his physician often enough to carry on the hypodermic medication, the Fowler's solution was ordered by the mouth (ten to fourteen drops daily). This treatment deranged his stomach and did not prevent a return of the pruritus and consequent sleeplessness, nor did it produce any improvement in the condition of the skin. About a month later, the injections were resumed, five being given on successive days, and six more at intervals of from two to three days. Under this treatment, the pruritus speedily subsided, the papules grew paler, and in two weeks had almost disappeared, leaving brownish stains. In conclusion, reference is made to two women affected with the so-called lichen planus of Wilson, which, according to the writer's view, is simply a variety of lichen ruber. [In this connection we must express our decided conviction that the lichen ruber of Hebra and the lichen planus of Wilson are entirely distinct affections, although the prevailing opinion of dermatologists, both in this country and in Europe, is that expressed by Köbner. The original descriptions of Hebra and Wilson bear little resemblance to each other, but the description of lichen ruber in the last edition of Hebra and Kaposi is so modified as to cover both affections. From the description of the case treated by Köbner, we feel confident that it was one of lichen planus, of rather unusual extent, and not one of true lichen ruber. Its cure, therefore, is not so remarkable as it might otherwise seem. The paper, however, is an interesting one, and the comparative effects produced by arsenic administered internally and subcutaneously are exceedingly instructive.]

9. In Liveing's article on *saccharine urine in chronic eczema*, he states that he finds sugar and albumen not uncommon in the urine of patients with obstinate eczema. The glycosuria depends upon defective assimilative processes, in which certain functions of the liver are especially at fault. In women the saccharine urine acts as a local irritant and greatly aggravates pudendal eczema. According to the writer, both the eczema and the glycosuria are mainly due to overfeeding. He recommends, therefore, an almost total abstinence from sugar, and a decided restriction in the use of animal food. Contrary to the opinion which is commonly entertained, he regards starchy food, such as bread, rice, and maccaroni, as being far less injurious than a meat diet.

10. Lassar believes in the *treatment of eczema*, especially in its acute form, by covering the affected skin with some disinfecting substance dissolved in oil or fat. For the development of germs disposed to excite inflammation, there could be no more favorable soil than the exuding surface of an eczematous patch. Hence absolute cleanliness of the inflamed skin is the first requirement in the treatment of the disease. It is not surprising that in the crusts and scabs of eczema we should find various micro-organisms in luxuriant vegetation. In place of the dusting powders and lead washes recommended by Hebra and other authorities for the treatment of acute eczema, Lassar makes applications of oil containing from one to two per cent. of carbolic acid. Olive oil is to be preferred to linseed and similar drying oils, which are apt to decompose sooner and to prove irritating. He claims that this treatment lessens the itching and the swelling of the skin, which water and lotions of all kinds increase. Salicylic acid may be substituted for the carbolic, or thymol of one-per-cent. strength may be employed.

11. Meyerhoff, in this article on *the hypodermic use of ergot for varicose ulcer and chronic eczema of the leg*, attributes to an excessive vascularity the chronicity, obstinacy, and tendency to relapse which are characteristic of these affections. He therefore recommends the subcutaneous injection of extract of ergot, with a view to destroy the network of dilated blood-vessels, and claims to have met with beneficial and even astonishing results. His method is to apply a two-per-cent. carbolic-acid lotion to the ulcer, and to inject ten centigrammes of the extract into the neighboring tissue every second or third day. After the injection a flannel bandage is applied, and rest is enjoined for that day. The treatment is not pleasant, as the pain produced by the injection lasts from two to eight hours. No abscesses were occasioned in nine cases treated by the writer, and large ulcers of long standing healed speedily and permanently.

13. Crocker presented a patient, showing the successful results of the *treatment of psoriasis with turpentine and chrysophanic acid.* The former had been applied to one side of the body, and the latter to the other. The acid, in lard, was gradually increased in strength from six to twelve per cent., while the turpentine, which was at first applied diluted with three parts of oil, was finally used pure. There was little if any difference noted in the remedial effect of the two applications. The turpentine occasioned some tingling, but was free from the disadvantage of staining the skin. In the discussion, Crocker remarked that he had never known strangury to occur from the use of turpentine in this manner.

19. Angelucci claims to have proven *the parasitic nature of molluscum* by the use of certain reagents lately employed in microscopical work. In the epithelial cells which contain molluscous corpuscles, methyl violet or gentian blue reveals numerous groups of small, dark, nuclear bodies. To these micrococci, according to Angelucci, may be ascribed the origin of the affection, whose contagious nature has been shown by clinical observation to be beyond doubt [?]. In its incipient stage, the molluscum appears as a thickening of the epidermis. In the superficial cells are imbedded the molluscous corpuscles surrounded by the above-mentioned micro-organisms. [It will be noted that the writer, in accord with other careful investigators, rejects the old theory that the affection is of sebaceous origin.]

20. Thin accepts Virchow's view of *the pathology of molluscum*, that it is a non-glandular affection, resulting from an abnormal growth of epidermic cells. The internal root-sheath appears to be the starting-point of the affection, and the molluscum cells, escaping from the follicle, inoculate the free surface of the epidermis around the follicular opening at different points. At these distinct foci the disease develops, and through their coalescence is formed the tumor, the development of which is attended by falling out of the hair and disappearance of the sebaceous glands. At least, this was the course of the affection according to the microscopical sections made by Thin.

21. The term "universal, diffuse, congenital keratoma of the human skin" is regarded by Dr. Kyber as a more correct expression for what is commonly known as *ichthyosis.* [It does not appear to us to be, on the whole, as convenient a term for general use, and we take this opportunity of remarking that the function of a name is to indicate and not to define an object.] The patient described by Kyber as presenting universal, diffuse, etc., died at the age of thirty-six hours. [Nearly thirty pages are devoted to an obituary notice of this remarkable infant, in which we can not discover upon hasty perusal that any portion of the skin or its contents has been slighted. The article is an extremely interesting one—to such as are interested in minute and unimportant details, and is accompanied by a lithographic portrait, which may be more or less instructive, but certainly can not be considered handsome.]

24. Liveing endorses the *treatment of ringworm by croton oil*, recommended by Alder Smith. He mentions the number of efficient remedies in use, but adds that they are efficient only when brought into direct contact with the parasite. While a ringworm on the neck may be cured by a single application of iodine, it may take years to cure a similar patch on the scalp. Croton oil has the property of reaching the disease and setting up a deep-seated follicular inflammation which destroys the trichophyton. The too free use of croton oil is to be avoided on account of the possibility of producing a slough, and consequently a permanent bald patch. By means of a camel's-hair pencil, the oil should be applied at first to a patch no larger than a quarter of a dollar. A few hours later, a warm poultice should be applied and kept on all night. Three or four similar applications may be required on succeeding days, to set up the requisite amount of inflammation. When the boggy condition of the inflamed scalp has somewhat subsided, the stumpy hairs should be extracted. This plan of treatment is only adapted to chronic and obstinate cases, and is not to be used in cases of children under ten years of age.

25. In a valuable paper on *the diagnosis of favus*, Aubert calls attention to certain interesting and practical points. There are two indications of the disease, he claims, upon which a positive diagnosis can be based, viz., 1. The presence of favic material. 2. Separation of the fibers of the hair and the presence of air in longitudinal streaks. In cases of favus in which the crusts are abundant no difficulty is commonly encountered. The cup-shaped form must not always be looked for, as it is only noted in crusts which have recently appeared at the follicular openings. The color, which is of a characteristic bright yellow when the crusts first appear, becomes much paler as they increase in volume. In cases in which the favic material is not visible to the naked eye, the diagnosis is more difficult, and a study of the condition of the hairs affords great assistance. According to the writer, a separation of the fibrous elements of the hair, forming longitudinal lacunæ, is an ever-present indication of parasitic disease, while the otherwise unaltered condition of the hair is an indication of favus. The presence of air in the hair, which may be seen under the microscope with a low power, causes an opacity when viewed by transmitted light, but gives rise to clear white streaks when examined by reflected light.

26. Mégnin exhibited before the Societé de Biologie, of Paris, a mouse whose head and back were almost covered with the crusts of favus. In the neighborhood where this mouse was caught there appeared to be *an epizoötic of favus*. Many of the mice similarly affected were found to be blind and deaf as a result of the eruption, and unable to find their way back to their holes [!]. Mégnin referred to the existence of favus in cats, dogs, horses, oxen, and other animals, and its transmissibility from them to the human species. In this connection he mentioned the circumstance of fifteen soldiers becoming simultaneously affected with trichophytosis (ringworm) upon the face and neck. Upon investigation, this epidemic was found to have resulted from the fact that the soldiers used some horse-blankets as additional covering at night, the horses being affected with the same disease.

36, 37. Schüller differs from Baumgarten respecting *the relation of lupus to tuberculosis*. According to the latter, lupus evinces no tendency to caseous degeneration, is characterized by the presence of giant cells in the new granulation tissue, and is extremely vascular. It may become transformed into cicatricial tissue, and is liable to suppuration. On the other hand, caseous degeneration, absence of giant cells, and non-vascularity are characteristic of tubercle. Schüller admits these distinctions in cases of tuberculosis of long standing, but claims that they do not exist in the early stage of tubercular development. From a careful study of synovial tuberculosis he reaches the conclusion that lupus may justly be regarded as an incipient form of tuberculosis.

38. Besnier discusses the *new methods of treating lupus* by scraping (Volkmann) and linear scarification (Squire), and remarks that one can not supersede the other, as each operation is applicable to a certain class of cases. The value of linear scarification is shown by its prompt, complete, and beneficial effect. From the commencement of this plan of treatment the progress of the lesion is checked, and the restoration of the affected part, a nose, *e. g.*, is most surprising. So long as the cartilaginous skeleton of this organ has not been destroyed, it is possible to restore it almost *ad integrum*. Besnier employs in his operations short needle-knives firmly set in a handle similar to that of the ordinary cataract needle. With one of these, held like a pen between the thumb and fingers, he makes parallel incisions, the depth of which is determined by the degree of resistance encountered, the pathological tissue being much softer than the healthy skin. The operation is slightly painful, although a marked difference in the sensibility of patients is noticed. It should be done gently, and even imperfectly at first, so that the patient may become accustomed to it, and thus render local anæsthesia unnecessary. During the operation small pieces of sponge should be pressed on the scarified surface with the fingers of the left hand, leaving the right hand free to continue the incisions. No unpleasant effect follows the scarification, and the operation may be repeated in a week. Cases of ulcerating and serpiginous lupus of the face appear to be especially adapted to treatment by this method, while the erythematous form of lupus is not apt to yield so readily.

40. Guinard reports an interesting case of *miliary cancer of the skin* of the entire thorax and right arm of a woman, aged forty-one. It had begun two years previously as a very small tumor upon the right breast. A cancer doctor applied an irritating salve, which caused ulceration, and was followed by the development of similar tumors in the neighborhood. Others developed afterward upon the arm and back, and were attended by severe pruritus. The patient's general condition was poor, and the skin presented a characteristic yellowish hue. Upon the right breast was an ulcer as large as the hand, while upon the remaining portion of the affected skin were small bleeding ulcerations. In connection with this case, attention is called to the unusually small size of the tumors, which varied from the size of a hempseed to that of a pea; to the total absence of ganglionic engorgement; and finally to the injurious effect of irritant applications. Had the breast been removed at the outset, it is probable that this operation would have prevented the spread of the disease, which in the present case must necessarily prove fatal. In such cases, according to M. Guibout, a diathesis exists, but local irritation predisposes to the appearance of cutaneous lesions, which tend to aggravate the general condition of the patient.

42. This report of a clinic, held by M. Charcot, gives a description of a case of *anæsthetic leprosy* and one of *scleroderma.* It abounds in citations of microscopical researches and various hypotheses respecting the pathological nature of these affections, and ends by stating that the question, as to whether these affections are of central or peripheral origin, can be settled only by further research.

44. As bearing upon the question of *the parasitic nature of leprosy*, M. Gaucher states that he extracted from a tubercle on a leper, under M. Hillairet's treatment, a drop of blood, which was found to contain bacteria in large numbers. The lancet and glass slides which were used had previously been dipped in alcohol and burned. In blood taken from the patient's finger-tip, bacteria were also present, though in smaller numbers.

QUARTERLY REPORT ON ORTHOPÆDIC SURGERY.

No. IV.

By CHARLES T. POORE, M. D.,

SURGEON TO ST. MARY'S FREE HOSPITAL FOR CHILDREN.

1. Buzzard, T.—Clinical lecture on infantile paralysis and acute anterior poliomyelitis. "Med. Press and Circ.," Jan. 16, 23, 1881.
2. Finlay.—Case of infantile paralysis. "Med. Times and Gaz.," Jan. 8, 1881.
3. Karlsioe, W. J.—Facts in regard to the Swedish movement-cure. "Phila. Med. Times," Jan. 29, 1881.
4. Lee, B.—Some tabular results of the movement-cure. *Ibid.*, Feb. 26, 1881.
5. Post, A. C.—Torticollis treated by open operation. [N. Y. Surg. Soc.] "Med. Record," Jan. 1, 1881.
6. Keating, J. W.—Weak spines in young girls, and their treatment. "Phila. Med. Times," Feb. 26, 1881.
7. Rickitt, J. D. T.—Hysterical spinal affection of two years' duration cured by Corrigan's iron. "Lancet," Jan. 15, 1881.
8. Feurer, G.—Anatomische Untersuchungen über Spondylitis. "Arch. f. path. Anat. u. Physiol. u. f. klin. Med.," lxxxii, 1, 1880.

9. FOURNIER, A.—Un cas de mal de Pott d'origine syphilitique. "Ann. de Dermat. et de Syphil.," Jan., 1881.
10. WALSH, J. F.—A case of Pott's disease in the adult treated by the plaster-of-Paris bandage: recovery. "Phila. Med. Times," Mar. 12, 1881.
11. CROFT.—Tubercular disease of joints. [Path. Soc. of London.] "Brit. Med. Jour.," Feb. 26, 1881.
12. BAKER, W. M.—Two cases of "acute arthritis of infants." "St. Barthol. Hosp. Rep.," xvi, 1880.
13. OWENS, E.—Three cases of knee-joint abscess in children. "Lancet," Feb. 12, 1881.
14. SCHUPPERT, M.—A review of the discussion on morbus coxarius at the National Congress held in Philadelphia in 1876. "Proc. of the Louisiana State Med. Assoc.," 1880.
15. JATLAND.—Elongation of the femur after hip disease. "Brit. Med. Jour.," Feb. 5, 1881.
16. LEVIS.—A substitute for Hutchison's method of treating coxalgia. "Phila. Med. Times," Jan. 29, 1881.
17. LANNELONGUE.—Coxalgie récente; cavité tuberculeuse de la tête du fémur; lésions peu accusées de la synoviale. "Bull. et Mem. de la Soc. de Chir.," 1881.
18. RECLUS, P.—Du redressement des membres inférieurs par l'ostéotomie et l'ostéoclasie. "Gaz. Hebdom.," Feb. 18, 1881.
19. BRADFORD, E. H.—Two cases of knock-knee treated successfully: one by apparatus, and the other by osteotomy. "N. Y. Med. Jour.," Jan., 1881.
20. MORTON, T. G.—Complete osseous anchylosis of the knee treated by removal of a wedge of bone. "Phila. Med. Times," Mar. 12, 1881.
21. WILLETS, C. H.—Tenotomy for a case of scrofulous disease of the joints. *Ibid.*, Feb. 12, 1881.
22. WHEELER, W. J.—Disease of the os calcis. "Brit. Med. Jour.," Feb. 5, 1881.
23. RODDICK, T. G.—Remarks on club-foot. "Canada Med. and Surg. Jour.," Jan., 1881.
24. WILLETT, A.—Remarks upon resection of the tendo Achillis in paralytic talipes calcaneus, with an account of a new method of performing the operation. "St. Barthol. Hosp. Rep.," xvi, 1880.
25. MORTON, T. G.—Cases of club-foot. "Phila. Med. Times," Jan. 29, 1881.
26. BAKER, H. F.—Treatment of webbed fingers. "Brit. Med. Jour.," Jan. 8, 1881.
27. POST, A. C.—Adams's operation for the relief of a cicatricial depression. "Med. Record," Mar. 12, 1881.

5. *Division of the sterno-cleido-mastoid muscle for the relief of torticollis*, by subcutaneous section, especially where the muscle is very rigid, is always an operation accompanied with some danger, from the important vessels and nerves situated about the muscle, and from the danger of air getting into a vein. The method advocated by Dr. Post, of dissecting down upon the tendon and then passing a director under it, is certainly a safe procedure. It is much more satisfactory, and we are certain to make our section more perfect. We have tried it in one case, and found it much easier than subcutaneous tenotomy.

9. The following case of *syphilitic disease of the bones of the spinal column* is reported: A man, fifty-six years of age, of athletic development, but whose health had become greatly impaired, came under observation. An examination showed that he had a sarcocele, evidently specific, gummy tumors in various portions of his body, an ulceration of the great toe, a specific eruption on his thighs, and a marked atrophy of the gluteal muscles. He had complained of a dull pain in the lumbar region, at times becoming acute and then shooting down into the lower extremities. There was no curvature of the spinal column. Pain was caused by pressure. There was atrophy of the gluteal and adductor muscles of the left side. The lower limbs were very weak, much more so than the upper extremities. Walking was difficult, and there was a fibrillar trembling of the atrophied muscles.

Under anti-syphilitic treatment there was some improvement in the specific lesions, but none in the spinal, and the patient gradually failed and died. On post-mortem examination, the lesions due to syphilis were very apparent. The third and fourth lumbar vertebræ were found diseased. On either side of the spinal column, and situated in the psoas muscles, abscesses had been developed, which were in connection with the diseased vertebræ. The dura mater was notably thickened opposite the point of disease, especially at its reflection on to the nerve roots. The immediate envelopes of the cord were absolutely healthy. The principal lesion was confined to the third and fourth lumbar vertebræ. Their bodies were infiltrated in their posterior half with a yellowish material similar to putty. The morbid infiltration occupied the inferior zone of the third and the superior zone of the fourth vertebræ. The intervertebral fibro-cartilage between them had completely disappeared in its posterior two thirds. The cavity thus formed was filled with pus. The bodies of the vertebræ were denuded posteriorly, and the posterior common ligament was detached and presented considerable thickening. The intervertebral disk between the fourth and fifth lumbar vertebræ was softened and infiltrated with pus. The bodies of the third, fourth, and fifth presented, on microscopic examination, the lesions typical of *ostéite condensante* with purulent and caseous infiltration, exactly as in gummy tumors of bone. The intervertebral foramina corresponding to the diseased bones were diminished in size, partly by the lesion of the bone, and partly by the swelling and infiltration of the surrounding tissues. Microscopic section showed the fourth lumbar nerve, at its point of emergence from its foramen, encroached upon by a gummy mass originally developed (in all probability) in the periosteum of the corresponding diseased vertebræ. Beyond this tumor the nerve was the seat of an interstitial neuritis, with partial atrophy of its tubes. The ganglia of this nerve were involved in changes. Changes were also found in the third and fifth lumbar nerves.

11. This paper on *tubercular disease of joints* is made up from six specimens, namely: three of morbus coxarius, two of disease of the knee joint, and one of disease of the ankle joint, which Mr. Croft considered tubercular. By "tubercle" he understood a small-cell growth, including epithelium and giant cells, and a fine reticulum, the whole being non-vascular, and tending, with varying rapidity, to become caseous. All of these cases had been characterized by bad general health, tedious progress, and indolent swelling, with abscesses which discharged carious pus. The first specimens were taken from a case of knee-joint disease in a man aged twenty, who had a phthisical history. The limb was amputated, and the patient died thirteen months later from intestinal phthisis. Sections were made through the semilunar cartilage and a fungous mass growing from it. The lower part of the cartilage was unaltered, but the upper layers showed signs of inflammation. Between the fungous layer and the free edge of the cartilage was a well-defined zone of a totally different structure, consisting of tubercular granulations in all stages of growth. Sections made through the bone on its articular surface showed none of these changes. The next section was from a case of hip-joint disease, and was made through the thickened synovial membrane, which showed infiltration with granulation tissue, a superficial caseous layer, and an intermediate layer of typical tubercular granulations, with many vessels in their interstices. Sections of bone from the head of the femur showed the same tuberculous deposit. A third series from the head of the femur showed a similar condition to that found in the first case. The bone was unaffected. The fourth series, from a knee joint, in a patient who died, shortly after an excision, of tubercular disease of the lungs and spleen. The sections showed a layer of granulation tissue and a layer of tubercular growth. The fifth series showed, in the synovial fringe, the parts infiltrated with tubercle. The sixth series were from a patient with hip-joint disease, who died from tubercular meningitis. The sections through the bone showed scattered tubercular granulations in the medullary tissue; the periosteum and synovial membrane contained none. In all the specimens three zones might be observed with more or less clearness, viz.: 1. A superficial caseous zone; 2. A zone of tubercular material; 3. A zone formed of synovial membrane infiltrated with granulation tissue. In this last zone, and in the bone beneath, scattered tubercles were to be found in some cases, but never in the cartilage. Mr. Croft did not hesitate to describe the changes as tubercular, and he states that, in those cases in which the tubercular structure was most typical, tubercle was found elsewhere. The microscopical appearances and clinical history prove that the disease was tubercular and not merely chronic inflammation; inflammation had probably first been produced, and upon that followed the tubercular development. In five out of the six cases, there was no evidence of disease of any organs antecedent to the joint trouble, so that he thought this latter condition might be considered to be primary. On this ground he advocates an early removal of the diseased joint. In a discussion that followed, Mr. Bryant thought the tubercular disease of the joint was a secondary, not a primary affection; Mr. Macnamara thought that cases of joint disease with continued high temperature were always tubercular.

12. The author reports the two following cases of "*acute arthritis of infants*": An infant six months of age came under observation with disease of the right knee joint of six or seven weeks' duration. The joint was distended with fluid, and on making pressure sanguineous pus oozed from a fistulous opening. The lower end of the femur seemed enlarged as from osteitis. The child was pale, but fairly healthy. The joint was freely opened on either side of the patella, and pus was let out. No dead bone could be detected, but the bone felt bare. In a week the joint was much reduced in size, and a month later the wounds had healed, the enlargement of the end of the femur was greatly diminished, and the motion of the joint was free and painless.——— An infant nine weeks old, with disease of the knee joint, similar to the other case, came for treatment. There was much puffiness on each side of the patella. There was a fistulous opening opposite the internal condyle. The swelling was first noticed when the child was four weeks old, and the abscess opened several days later. The joint was freely opened. Improvement immediately began, and the patient was discharged with a perfect joint at the end of two months.

15. The question of *elongation of a long bone after disease of a joint*, into the formation of which it enters, is not easily settled. It is a well-known fact that inequality in the length of the lower limbs is very often congenital, and, in the absence of any proof to the contrary, the existence of any such condition should be attributed to a congenital rather than a pathological defect.

16. The following *substitute for Hutchison's method of treating coxalgia* is advocated. Extension is obtained by flexing the knee and then applying a silicate-of-sodium bandage, and allowing the patient to go about on crutches. The flexion prevents the foot from touching the ground, and the weight of the limb keeps up extension. The bandage is provided with lacing, and is removed at night.

18. In this review of the results of *osteotomy and osteoclasis* for anchyloses and rachitic deformities of the lower extremities, more disastrous results are reported than the statistics of English surgeons show. Thus, in thirty-nine osteotomies performed at the coxo-femoral articulation, between 1872 and 1877, thirty-two patients were cured, one died, and five were lost sight of. Louvrier, in twenty-one osteoclases for anchylosis at the knee joint, had two fatal cases. Chalot reports twenty-nine osteotomies, with six deaths, the operation being performed for anchylosis of the knee. Pradignac, in thirty osteotomies for deformity after fracture of a long bone, reports three fatal results. Bœckel has reported one hundred and twenty-six osteotomies for rachitic deformities. No mention is made of any fatal cases. Osteotomy for the correction of genu valgum is not practiced much in France. Peyre, in a thesis, has mentioned some unfortunate results, as arthritis, *tumeur blanche*, and anchylosis. One limb has been amputated in order to save life, and Bœckel cites a case of acute septicæmia. Among French surgeons, osteoclasis, according to the author, seems to be the favorite operation. Delore, of Lyons, has practiced *redressement brusque* for the correction of genu valgum since 1870. Collins has lately constructed an osteoclast to accomplish with more precision what Delore does by manipulation. It is said to have given excellent results without any injury to the joint. In experimenting on the cadaver, the following lesions were found: a detachment and displacement of the external condyle of the femur with its epiphysal cartilage, a flattening of the internal condyle by crushing of its cancellous bony structure, and a detachment of the periosteum on the external aspect of the femur. The external lateral ligament was intact. In conclusion, the author considers that an osteoclasis by means of Collin's apparatus is to be advocated, on the same ground that a simple fracture is less liable to complications than a compound fracture. [In considering the advantages of osteoclasis over osteotomy for the correction of genu valgum, the author has entirely omitted to state the method of operation in the latter class. Delore admits that after *redressement brusque* there is a liability for the deformity to return, and the time requisite for recovery of full use of the joint, in some cases one year, would seem to indicate that the articulation had sustained a very serious injury. In regard to the ultimate results obtained by the use of Collin's osteoclast, nothing is known. The immediate result on the lower end of the femur, as demonstrated on the cadaver, namely, a crushing of the internal and a separation of the external condyle of the femur from its attachment to the shaft, as well as a tearing of the periosteum on the external aspect of the femur, would seem to be quite serious lesions. If the theory that, in those with a tuberculous diathesis, injury to the cancellous tissue is apt to be followed by osteitis, is a tenable one, it is a question whether the tearing and crushing of the condyles is not more liable to be followed by disastrous results, and thus destroy the integrity of the joint, than a simple osteotomy above the epiphysal line.

22. This was a case of *excision of the os calcis* in which an attempt was made to save a portion of the bone; but it was found so profoundly diseased that the whole bone had to be removed. [Mr. Holmes lays down the rule, that partial excisions of this bone are almost always unsatisfactory, and that it is much better in the vast majority of cases to remove the whole bone at once.]

23. Dr. Roddick advocates the following simple *treatment of club-foot by strapping, and the use of the gypsum bandage.* In the new-born infant he trusts to manipulation, and does not begin surgical treatment until the child is one or two months old. He divides the tendo Achillis first, as he finds that after this the tibial tendons may not require division. The plantar fascia almost invariably requires section. Having tenotomized, the foot is brought into position at once. He then takes a strip of rubber plaster, one inch wide, and applies it in the following manner: beginning at about the center of the dorsum of the foot, he carries it round the sole, over the most prominent part of the outer border, and up on the outer side of the leg to the lower third of the thigh. This will be found to throw the foot out, and at the same time to flex the leg. Another plaster, less than an inch wide, is made to encircle the limb opposite the ankle, and this will be found to increase the eversion of the foot, and at the same time hold the first strip in position. He then applies a starch bandage. At the expiration of five days everything is removed, and a plaster-of-Paris bandage is applied. In about a fortnight this is removed, and passive motion is practiced for a few minutes, and the splint is reapplied or a new one put on. This process is repeated every ten days for a couple of months or longer, depending on the severity of the case. He finds that he gets excellent results from this method.

24. After calling attention to the difficulties in the way of affording permanent relief by the ordinary method of *resection of the tendo Achillis for talipes calcaneus of paralytic origin*, Mr. Willett advocates the following operation: Under the carbolic spray and with all Listerian precautions, he makes a Y-shaped incision some two inches in length over the tendo Achillis, continued in depth until the tendon is reached. At the lower or vertical portion of the incision, the dissection is continued until the tendon is fully exposed over its superficial and lateral surfaces for the space of one inch in length, its deep connection being left undisturbed. The tendon is now cut across at the point of junction of the oblique with the vertical portions of the wound; next, the proximal portion is raised, with its superficial connections undisturbed, to the extent of fully three quarters of an inch by dissecting along its deeper surface—in point of fact, reversing the dissection made upon the distal segment. A wedge-shaped slice of the tendon is now cut off from both segments, that from the upper segment being removed from the deep surface, while that from the lower segment is removed from the superficial surface. In both instances the base of the wedge is at the point where the tendon was divided. The heel being now pressed upward, the proximal portion, including both skin and tendon, is drawn down and placed over the distal portion, thus bringing the prepared cut surfaces of the tendon into apposition, in which position they are held by an assistant, while four wire sutures, two on either side, are passed deeply through the integument, then through both portions of the tendon, and again through the integument, and fastened. When completed, the united edges assume a V-shaped appearance, owing to the angle of the proximal portion being now attached to the terminal point of the distal portion of the original incision. After the Lister dressings have been applied, an anterior splint is molded to the front of the foot and leg, so as to keep the heel well raised. The patient is not permitted to use the limb in any way for some weeks; then a light, stiff dressing is applied for several months, followed by the use of a steel support. Three patients were operated upon after this method—one nine, one two and a half, and one six years of age. In two the result was very satisfactory, the patients being able to walk with their feet well applied to the ground; the third had not been seen since a short time after the operation.

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Miscellany.

The Accuracy of Clinical Thermometers.—A "Card to the Medical Profession," from the Winchester Observatory of Yale College, dated February 1, 1881, and signed by Mr. Leonard Waldo, the astronomer in charge, reads as follows: "The competition of business, coupled with the entire absence, up to this time, of any large observatory in this country paying special attention to thermometry, to which authoritative appeal could be made, has so affected the manufacture of thermometers for medical purposes, that it seems necessary to issue a card briefly indicating the errors commonly found to exist, and to explain why, in this case, the representations of the dealers may be at fault through the want of a proper understanding of the subtle errors to which medical thermometers are liable. Too great a desire to economize time, good material, and skilled labor has led, in the making of thermometers, to the following faults: 1. The graduation is sometimes started from one point of the scale, near the normal, and the size of the capillary tube is guessed at. No upper point being fixed by the maker, the higher graduations may be erroneous to the extent of several degrees. 2. Too much air separating the index from the column of mercury causes the index to rise with a jerky motion; air above the index forces the index down when the thermometer is taken away from the body. In some thermometers errors from this cause amount to two degrees at high temperatures. 3. New thermometers increase their readings rapidly during the first months after manufacture, so that instruments which were right when made may change their indications as much as two degrees within a year. It will be seen that these errors are not such as the dealer can readily detect. Even in those cases where a dealer is provided with a standard thermometer with which comparisons could be made, it is a difficult matter to determine the errors of the standard itself, and the unsupported representations of dealers and druggists, therefore, though made in perfectly good faith, can not, from the nature of the case, afford the physician satisfactory evidence that any thermometer he may buy is not affected with errors, which in many instances under our observation have amounted to several degrees. Following the example of the Royal Society's observatory at Kew, at which during the past year upward of five thousand thermometers were examined, this observatory has established a department to which any physician or other person may send thermometers by mail or express, and upon the payment of a small fee receive certificates of their exact errors. The facilities are such that there is no good reason why physicians should not buy their new thermometers furnished with the Yale certificate by the dealers: in those cases where no certificate is furnished the uncertainty may amount to two degrees. It should be remembered that thermometers which the physician has had in his possession for many months are certain to have had the requisite seasoning, and therefore an old thermometer with a recent certificate is more valuable than a new one, or one about whose age there is doubt. The observatory has been called upon within three months to certify about seven hundred thermometers from various parts of our country; the results of this work have demonstrated the gross inaccuracy of the cheaper clinical thermometers as commonly sold, and seem to render expedient the publication of this card, calling the attention of physicians to these errors and the great difficulty of detecting them except with the appliances of an observatory devoted to this work."

ITEMS.—It seems to us that the Alumni Association of the Medical Department of the University of the City of New York acted wisely in holding its annual dinner in mid-winter this year, for we are inclined to think that there are many physicians living in and about New York who would be pleased to attend the dinners of other alumni associations than those to which they severally belong, but who have felt a disinclination to take part in two or three such gatherings in rapid succession. The University Alumni dinner was thoroughly enjoyed by the alumni of other schools who were present, but it was a matter of remark that the University faculty was not as fully represented as has come to be customary. ═══ We have received two numbers of a Chinese medical journal, the title of which, translated, is "The Western Medical News." Accompanying the numbers is a note from the well-known surgeon, Dr. J. G. Kerr, dated Canton, January, 1881, in which he says: "The physicians of China, the oldest and most populous nation of the earth, have never had a medical journal. This is the first attempt to supply the want. With no exchanges, very few contributors, and a very limited medical literature, the difficulties of the undertaking will be obvious. The aid of all members of the medical profession in China, and especially of all medical missionaries, is earnestly solicited. At present the 'News' will be issued quarterly." Being wholly ignorant of the Chinese language, we can only take it for granted, on the strength of Dr. Kerr's name, that the matter contained in the "News" is to be commended. We may say, however, that the numbers before us contain some cuts that are very creditable.

ARMY INTELLIGENCE.—*Official List of Changes of Stations and Duties of Officers of the Medical Department, United States Army, from March 14, 1881, to April 13, 1881.*—WHITE, C. B., Major and Surgeon. Granted leave of absence for three months on surgeon's certificate of disability. S. O. 57, A. G. O., March 11, 1881. ═══ GIBSON, J. R., Major and Surgeon. Relieved from duty at Fort McHenry, Maryland, and to report to the Commanding Officer, United States Barracks, Washington, Dist. of Columbia, for duty as Post Surgeon. G. O. 52, Department of the East, March 22, 1881. ═══ BROWN, H. E., Major and Surgeon. Promoted from Assistant Surgeon, vice Otis, deceased. ═══ MEACHAM, F., Captain and Assistant Surgeon. To report for duty to the Commanding Officer at Fort Hamilton, New York Harbor. S. O. 52, C. S., Department of the East. ═══ MOFFATT, P., Captain and Assistant Surgeon. Relieved from duty at Camp Spokane, Wyoming Territory, and ordered to Fort Walla Walla, Wyoming Territory, for medical treatment. S. O. 35, Department of the Columbia, March 20, 1881. ═══ WOODRUFF, E., Captain and Assistant Surgeon. Relieved from duty in the Department of Texas, to proceed to New York City, and by letter report arrival to the Surgeon-General. S. O. 72, A. G. O., March 30, 1881. ═══ AINSWORTH, F. C., Captain and Assistant Surgeon. Now awaiting orders in New York City, to report in person to the Commanding General, Department of Texas, for assignment to duty. S. O. 72, C. S., A. G. O. ═══ WORTHINGTON, J. C., Captain and Assistant Surgeon. Now on leave of absence, to report in person to the Commanding General, Department of the

East, for assignment to duty. S. O. 72, C. S., A. G. O. === Reed, W., Captain and Assistant Surgeon. Awaiting orders at Fort McHenry, Maryland, to report to the Commanding Officer of that post for duty. S. O. 52, C. S., Department of the East. === Gardiner, J. de B. W., Captain and Assistant Surgeon. The leave of absence granted him in S. O. 16, February 8, 1881, Department of Arizona, is extended five months; and so much of S. O. 34, C. S , A. G. O., as relates to him is revoked. At the expiration of his present leave of absence, to report by letter to the Surgeon-General. S. O. 59, A. G. O., March 14, 1881. === Schué, E. W., First Lieutenant and Assistant Surgeon. When relieved at Fort Grant by Astistant Surgeon J. B. Girard, to report in person to the Commanding Officer, Camp Thomas, Arizona Territory, for duty. S. O. 27, Department of Arizona, March 8, 1881. === Arthur, William H., First Lieutenant, and Assistant Surgeon (recently appointed), to report in person to the Commanding General, Department of the Platte, for assignment to duty. S. O. 62, A. G. O., March 17, 1881. === Bushnell, George E. First Lieutenant and Assistant Surgeon (recently appointed), to report in person to the Commanding General, Department of Dakota, for assignment to duty. S. O. 62, C. S., A. G. O. === Birmingham, H. P., First Lieutenant and Assistant Surgeon (recently appointed), to report in person to the Commanding General, Department of the Missouri, for assignment to duty. S. O. 62, C. S., A. G. O. === Wyeth, M. C., First Lieutenant and Assistant Surgeon (recently appointed), to report in person to the Commanding General, Department of Dakota, for assignment to duty. S. O. 62, C. S., A. G. O. === King, J. H. T., Captain and Assistant Surgeon. The leave of absence granted him in S. O. 253, November 29, 1880, from A. G. O., is extended to June 30, 1881, and his resignation accepted by the President of the United States, to take effect June 30, 1881. S. O. 65, A. G. O., March 21, 1881.

Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, from January 1, 1881, to March 31, 1881.—Bailhache, P. H., Surgeon. Detailed as chairman, Board of Examiners, January 4, 1881. To proceed to Barnstable, Boston, and New Bedford, Massachusetts, and Providence, Rhode Island, as inspector, February 1, 1881. To proceed to Wilmington, North Carolina, as inspector, assume temporary charge of the service, and superintend the re-opening of the Marine Hospital at that port, March 12, 1881. === Long, W. H., Surgeon. Detailed as member, Board of Examiners, January 4, 1881. === Fessenden, C. S. D., Surgeon. Detailed as chairman, Board of Survey, for the physical examination of officers of the Revenue Marine Service, February 8, 1881. === Doering, E. J., Surgeon. Detailed as recorder, Board of Examiners, January 4, 1881. === Gassaway, J. M., Passed Assistant Surgeon. Detailed as recorder, Board of Survey, for the physical examination of officers of the Revenue Marine Service, February 8, 1881. === Smith, Henry, Passed Assistant Surgeon. Granted leave of absence for thirty days, from March 1, 1881, to February 8, 1881. Upon expiration of leave of absence to proceed to Norfolk, Virginia, and assume charge of the service, relieving Surgeon R. D. Murray, March 15, 1881. === Irwin, Fairfax, Assistant Surgeon. When relieved by Assistant Surgeon W. A. Wheeler, to proceed to Wilmington, North Carolina, and assume charge of the service, relieving Surgeon P. H. Bailhache, March 30, 1881. === Guiteras, John, Assistant Surgeon. To proceed to Key West, Florida, and assume charge of the service, relieving Passed Assistant Surgeon Smith, February 5, 1881. === Wheeler, W. A., Assistant Surgeon. To proceed to Charleston, South Carolina, and assume charge of the service, relieving Assistant Surgeon F. Irwin, March 30, 1881. === Benson, J. A., Assistant Surgeon. To proceed to St. Louis, Missouri, and report to Surgeon H. W. Sawtelle for duty, February 5, 1881. === Carmichael, D. A., Assistant Surgeon. To proceed to Boston, Massachusetts, and report to Surgeon J. Vansant for duty, February 5, 1881. === Armstrong, S. T., Assistant Surgeon. To proceed to New Orleans, Louisiana, and report to Surgeon H. W. Austin for duty, February 5, 1881. *Appointments.*—The following candidates, having passed the examination required by the regulations, were appointed Assistant Surgeons, February 4, 1881: Duncan A. Carmichael, of New York, and Samuel T. Armstrong, of Missouri.

THE

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JUNE, 1881.

Original Communications.

A CASE OF OVARIAN TUMOR TREATED BY INCISION AND DRAINAGE.

By T. GAILLARD THOMAS, M. D.,
SURGEON TO THE WOMAN'S HOSPITAL OF THE STATE OF NEW YORK, ETC.

I WAS recently called by Dr. Joseph W. Howe, of this city, to see a lady from the West. She had had a tumor for about three years, which had been diagnosticated to be ovarian, and it became so large that, about two years ago, she went to a surgeon in Chicago, who operated upon her. He made every attempt to remove the tumor, but it was everywhere attached, and the hæmorrhage was so great that he abandoned the effort and closed the abdominal wound, leaving a drainage tube in it. The patient recovered from the operation.

Six months later a second operation was unsuccessfully attempted, the tumor, which had been drained, having refilled and attained to about the size of the uterus at the eighth month of pregnancy. The opening where the drainage tube entered still remained, and the patient would insert into it from time to time an India-rubber drainage tube and draw off some purulent fluid, which proceeding gave her great relief. Her health depreciated very much, however, and on several occasions Dr. Howe thought she was dying. She passed into a state of collapse; the pulse went up to 160, and became almost imperceptible at the wrist; the hands and feet became cold; and the face appeared as if she were dying. By proper treatment, however, Dr. Howe brought her out of each of these attacks.

I was called to see her about two months ago, and found her very much depreciated in strength. The tumor appeared to be almost solid, and extensively attached, but there was abundant evidence that it contained fluid. The patient was persuaded to enter my private hospital, where an attempt was made by the best of care and more thorough drainage to improve her condition ; but she gradually grew worse. Under these circumstances I cut directly down upon the tumor, and, without opening the peritonæum, tried to enucleate it, but there was so great hæmorrhage, and the sac was so universally attached, that I gave it up, and then cut directly into the mass, when a large amount of colloid fluid escaped. Carrying my hand into it, I found a large number of sacs, each of about the size of a cocoanut, filled with fluid, which I broke up. One existed almost outside of the large tumor, and it was into that that the India-rubber tube had been inserted by the patient, and pus withdrawn. I opened this thoroughly, exercising care that none of its contents should enter the peritonæum. Two glass drainage tubes were then inserted, one above and one below, in Douglas's cul-de-sac, through which carbolized water could be injected. The patient was placed upon the most nutritious diet, and injections of carbolized water were employed.

The tumor diminished in size until it was not larger than the head of a child at birth, and one month after the operation she left the hospital, with instructions to keep up the injections of carbolized water. A month later she appeared to be perfectly well, a cyst of the size of a goose's egg still remaining, which she drained with perfect ease.

CASE OF LARGE-ROUND-CELLED SARCOMA OF THE TESTICLE IN A UNILATERAL CRYPTORCHIS; EXTIRPATION; CURE.

By EDMUND C. WENDT, M. D.,

PROFESSOR OF COMPARATIVE ANATOMY AND HISTOLOGY IN THE COLUMBIA VETERINARY COLLEGE; CURATOR TO ST. FRANCIS'S HOSPITAL, ETC.

The literature of the subject of retained testicle is sufficiently meager to warrant the report of a case of this kind, which was observed at the German hospital in this city some three years ago.

Perhaps the case derives an additional interest from the fact that the operative interference was followed by speedy relief from a dangerous and distressing condition, a relief which has apparently resulted in an absolute and permanent cure. I said apparently resulted, because, although more than three years have now elapsed since the successful operation, without any recurrence of the malignant disease, it might still be premature to infer a permanent immunity from a local return or secondary deposits.

B. F., aged sixty-one, a watchmaker, a native of Germany, was admitted to the German Hospital February 26, 1878. His family history was unimportant. He remembered no serious previous illness. The patient had been born with cryptorchidism on the left side. About the middle of December, 1877, he first noticed a distinct swelling in the left inguinal region. This rapidly grew larger until the tumor reached its present dimensions. Simultaneously with its development he began to suffer from local pains, which were especially severe at night. Their intensity was, however, never such as to necessitate the use of narcotics. At that time he was living in Alabama, where he was subjected to various modes of treatment by different physicians of that State. The tumor, meanwhile, rapidly grew larger, and at length the patient determined to seek medical advice in New York. On admission to the hospital he presented the appearance of a middle-sized, rather anæmic man, of feeble muscular development. He weighed 124 pounds. An examination revealed no abnormality of the internal organs. His appetite was fair, the bowels costive, and micturition normal. In the left in-

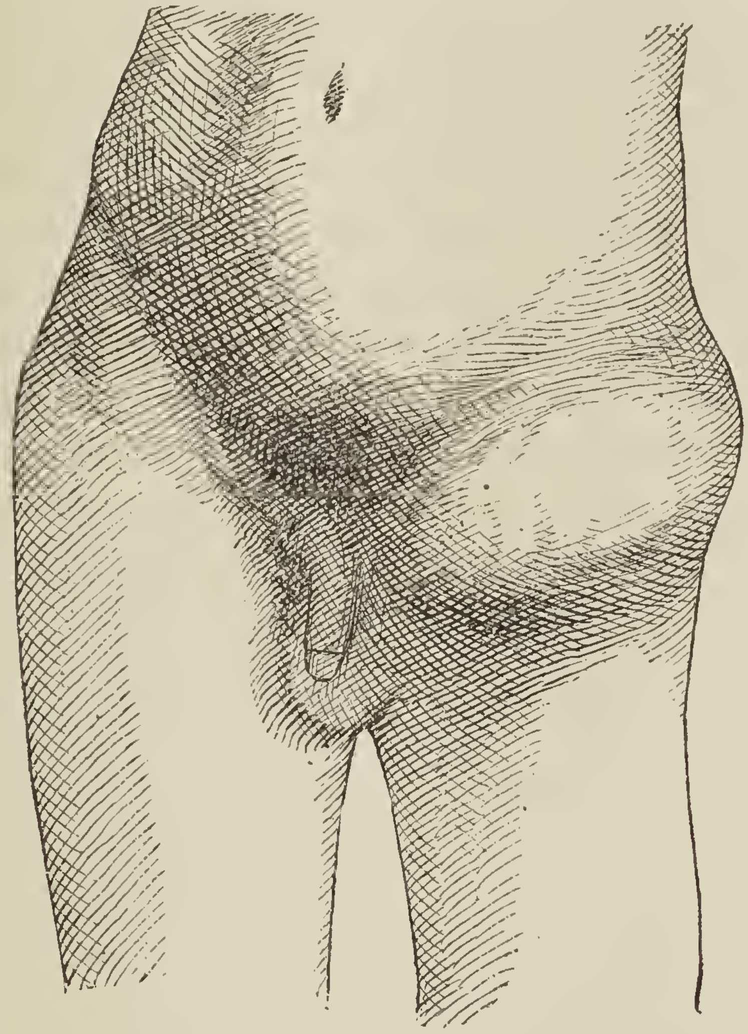

Fig. 1.

guinal region a large oval tumor was found. Its general direction corresponded to that of Poupart's ligament. It extended from near the left anterior superior spine of the crest of the ilium to about the lower border of the right pubic bone, and about one and a half inches to the right of the median line. The penis was pushed to the right side. The scrotum contained the right testicle, which was apparently healthy. The tumor measured eight inches in length, three in breadth, and twenty-one in circumference. It was somewhat movable, and the integument covering it was found to be non-adherent. Palpation revealed an upper very firm and nodular portion, and an inner somewhat softer part. Fluctuation was nowhere distinctly felt, nor was any spot of marked tenderness discoverable.

On March 6th the operation of extirpation was performed, with strict antiseptic precautions. The incision was made parallel with Poupart's ligament, and the tumor was gradually dissected out. A few cystic cavities containing some clear yellowish fluid were punctured. It was ascertained that the tumor did not extend into the peritoneal cavity. A pedicle was secured by two strong ligatures, and the wound was closed with catgut. A drainage tube was inserted into its lower end. The wound healed kindly, without a single untoward symptom, and the patient was discharged cured on the 27th of May, weighing almost 120 pounds.

The tumor was found to weigh nine ounces. On longitudinal section its cut surface presented a mottled appearance, in which a grayish, pale-fleshy color predominated. Glistening streaks of white tissue were seen to separate the encephaloid surface into many irregularly-shaped areas. The central portions showed rounded or club-shaped masses of a distinctly yellowish hue. Here and there the surface was streaked with reddish lines, or was punctated with similar dots. The parenchyma bulged out above the cut surface, the receding portions corresponding to the white tissue bands already mentioned. This convexity of the surface was supposed to indicate the cellular richness of the neoplasm, a supposition which received the confirmation of subsequent microscopical analysis. The bulging portions had a coarsely granular look, except at the central yellowish areas. The cysts, which had been externally conspicuous, were now found to involve exclusively the thickened tunica vaginalis.

The neoplasm evidently involved the epididymis, the degenerated remnants of which occupied about one lateral fifth of the entire tumor. There was, however, no well-marked boundary line separating it from that portion which corresponded to the testis proper. A thickened, fibrous capsule, the altered tunica albuginea, surrounded the entire growth. From this capsule the branching fibrous trabeculæ proceeded inward, gradually growing thinner as the center of the tumor was approached.

On microscopical examination the tumor was found to belong to the large-round-celled variety of sarcoma. But, although it clearly belonged to this type of neoplasm, it had a greater proportion of mature fibrous tissue than is generally contained in such growths. Of the seminiferous tubules no trace was discoverable. The bulk

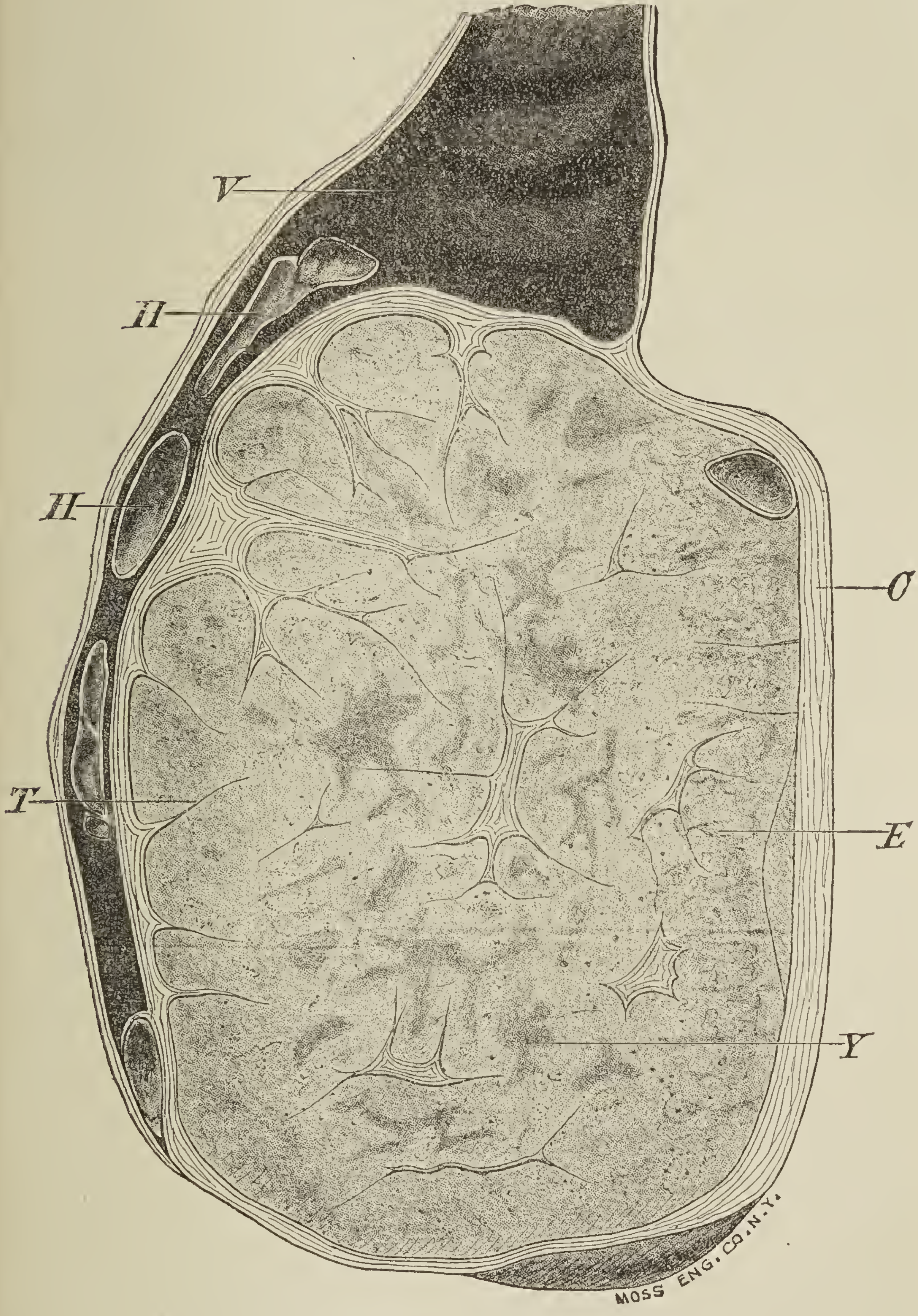

FIG. 2.—CROSS-SECTION OF TUMOR, SLIGHTLY REDUCED IN SIZE.

C, capsule; T, trabeculæ; V, tunica vaginalis, containing (H) cysts; E, portion corresponding to epididymis; Y, the central yellowish markings. The reddish punctate appearance is indicated by black dots.

of the sarcoma was made up of closely-placed, large, rounded, sometimes polyhedral corpuscles. A great majority of the latter were provided with spherical or ovoid nuclei, and distinct bright nucleoli. The body of these cells was, as a rule, quite coarsely granular. This applies, however, only to the examination of fresh specimens. In hardened sections the cell-bodies appeared shrunken, and the nuclei seemed proportionately large. Indeed, portions of the tumor resembled only aggregations of free nuclei, imbedded in a sparing amount of a delicately fibrillated connective-tissue matrix. The broad or narrow fibrous-tissue bands, which traversed the growth in all directions, gave to some sections a distinctly alveolar appearance. The areas thus marked off from one another presented an extreme irregularity of size and shape, no two being found alike. As regards the vascularity of the tumor, though not excessive, it was richly developed. The component cellular elements of the growth were in direct juxtaposition with the thin walls of the blood-vessels. In no instance could a separating adventitia be made out. There were portions of the tumor which showed capillary extravasations. It may incidentally be mentioned that the red blood-corpuscles had retained their integrity of structure in all such hæmorrhagic foci. This circumstance was not alone answerable for the mottled naked-eye appearance of the sarcoma; for these hæmorrhagic collections only accounted for the red streaks and dots microscopically visible.

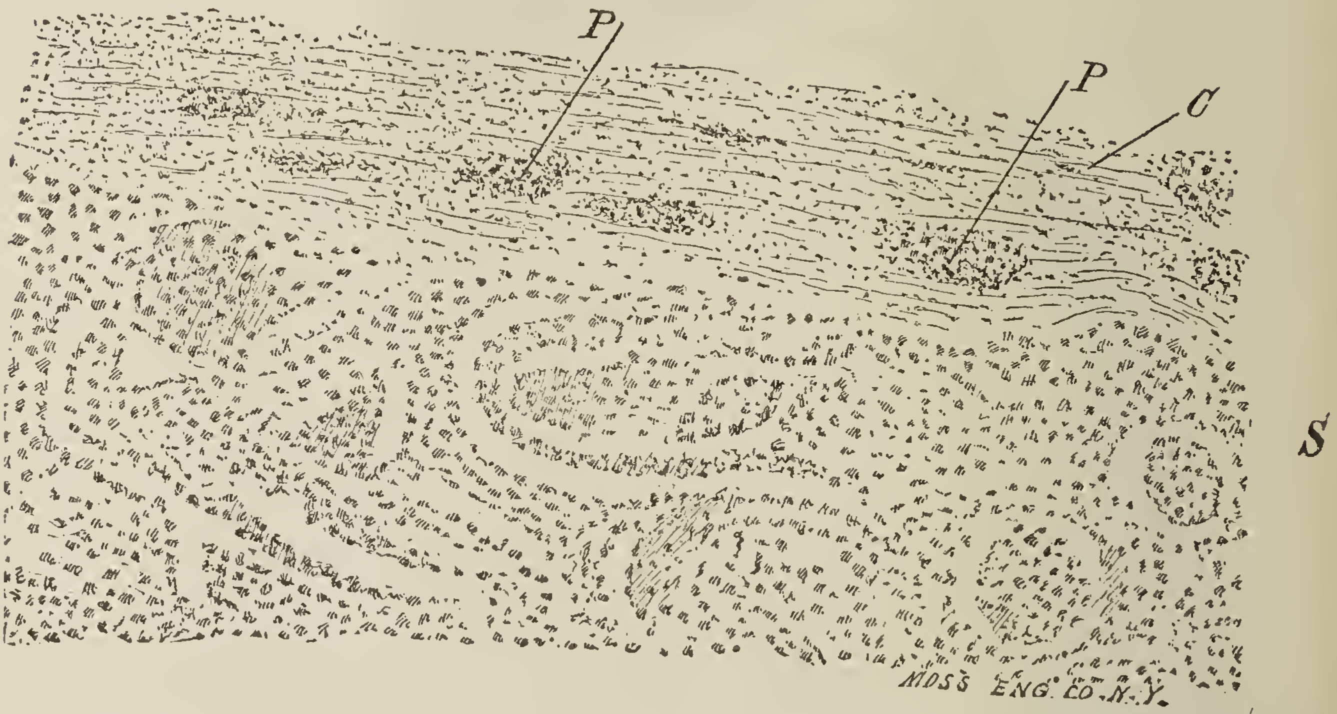

Fig. 3.—Section of Tumor, showing broad connective-tissue band at C, and the general plan of arrangement of the sarcoma cells at S. The connective tissue shows infiltration, and oval patches of heaped leucocytes at P. (Hartnack, Oc. 2, Obj. 4.)

The yellowish color, previously mentioned in connection with the gross appearance of the tumor, was due to fatty changes in some of the constituent cells of the tumor. An interesting point was noticed in this connection. The presence of fatty degeneration was detected readily enough. Portions thus altered assumed only a very faint rosy tint, or remained colorless, when the sections were submitted to a process of double staining with hæmatoxylin and eosine. Moreover, in osmic acid a characteristic black look of the fatty granules was produced. But there were other portions, the gross appearance of which did not materially differ from that of the fatty districts, but which, nevertheless, were microscopically quite distinct from the latter. Such areas were generally seen to occupy about the middle of some larger collection of round cells. Irregular in shape, and never separated from the sarcoma cells by connective tissue, these portions of the tumor were composed of a more or less

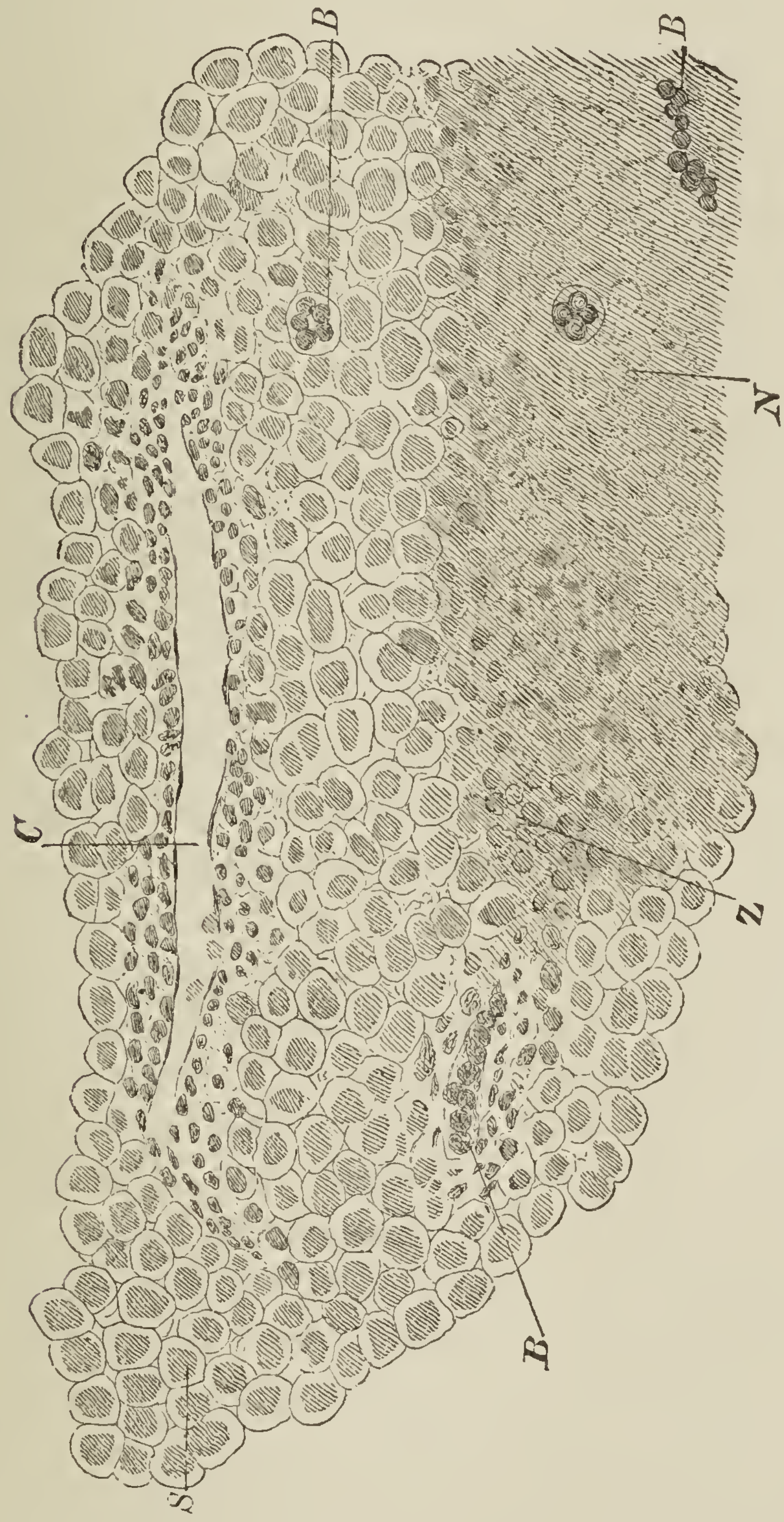

Fig. 4.—Thin Section viewed with a Higher Power.

C, Lymphatic tissue-cleft, showing three leucocytes; B, Blood-vessels; S, Ordinary rounded sarcoma cells with their large nuclei; Z, The zone of infiltration around N, a portion of the tumor exhibiting coagulation necrosis. (Hartnack, Oc. 3, Obj. 7.)

homogeneous or faintly granular mass. As before stated, it appeared fatty at first sight, but it failed to give the reaction of fat. Besides, such masses appeared to be, in a measure, marked off from neighboring structures by a narrow surrounding zone of spherical corpuscles, having the size and general appearance of leucocytes. Close inspection elicited the fact that these portions were entirely composed of altered sarcoma cells. This alteration had resulted in rendering their nuclei either quite indistinct or altogether invisible. Here and there a blood-vessel was still seen to course between these degenerated cells, but this was an exception rather than the rule, for it was quite apparent that a far less abundant vascularity distinguished these altered districts.

Whether this diminished blood-vascular supply was a primary cause, or a secondary effect of the morbid structural changes, is a difficult matter to decide. Arguing on general principles, the former may be received as affording a more satisfactory explanation. At any rate, it would appear that the very rapidity of growth in this neoplasm had led to a necrobiotic metamorphosis of some of its cellular constituents. The change which the cell areas just described underwent very probably corresponds to a somewhat advanced stage of coagulation necrosis, as described by Cohnheim and others. The next step in retrograde metamorphosis would probably have been true fatty degeneration, such as was found to have already taken place in some portions of the tumor. Coagulation necrosis, viewed in this light, must therefore be considered as a phase of declining cell life, analogous to the condition of cloudy swelling. And both states are to be regarded as the precursors of fatty disintegration. The writer is led to explain this matter at some length, because he has never before encountered precisely this stage of transformation in the cellular elements of a sarcoma.

One other point may receive mention here. Between the aggregations of large, round sarcoma corpuscles there appeared, at certain intervals, crevices, clefts, and openings. A distinct endothelial lining could in many cases be seen along these interstices. As an exceptional occurrence, leucocytes were seen within such channels. Red blood-corpuscles were never encountered there. It is safe to assume, therefore, that these spaces represent lymph-channels. On the other hand, it does not appear what important rôle—if, indeed, any—they played in the growth and development of this particular tumor. Still their presence here is a fact that I think should not be overlooked.

ON THE SO-CALLED RUPTURE OF THE INTERNAL LATERAL LIGAMENT OF THE KNEE JOINT.*

By CHARLES A. JERSEY, M. D.

The object of this monograph is not to call in question the existence of the condition known under the name of rupture of the internal lateral ligament of this joint. Probably all will acknowledge that rupture can, and does sometimes, exist as the result of traumatism or force indirectly applied; although rupture of this, like rupture of other ligaments, where the separation is not a complete one, is generally called a sprain. It is not to this comparatively mild form of sprain that I desire to call attention; but to another and more severe class, in which there is marked lateral movement at the joint, with pain of a decidedly more severe character than that usually accompanying the partial separation or laceration of the ligament which is found in those cases.

That there can be and are two distinct and separate varieties of sprains, no man of any experience will deny; but the question which I wish most particularly to discuss is, whether the more severe form of this injury is in the majority of cases a rupture of the ligamentous tissue, and can properly be classed under the term rupture, or whether the traumatism does not extend beyond the ligament and involve the bone, causing a fracture (so-called sprain fracture) of the tuberosity of the femur to which one extremity of this ligament is attached?

The distinction between a rupture of the ligament and a fracture of the tuberosity will perhaps affect the course of treatment only slightly or not at all, but to one who takes pleasure in searching out the effects of an injury, and knowing positively the result of a certain traumatism, it may be that the subject will prove one not devoid of interest.

Reasoning from the result of force applied laterally to the ankle joint, causing a Pott's fracture; from the effects of that force which causes a Colles's fracture; from several experiments made by Dr. W. T. Bull in the prosector's room of the College of Physicians and Surgeons, which it was my good fortune to witness, and the history of which, by the kind permission of Dr. Bull, I am allowed to insert in this article; and from several cases of so-called rupture of the internal lateral ligament that I have observed—I shall endeavor to prove that the majority of the cases are fractures of the tuberosity, or partial fractures of the condyle, and not ruptures, although I do not deny that some slight degree of laceration or stretching of the ligament may co-exist.

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* A thesis submitted for graduation at the College of Physicians and Surgeons, New York.

Let us refer for a moment to the anatomy of that part of the knee joint which is concerned in this injury—the internal condyle of the femur, the tuberosity above it, the internal lateral ligament, and the head of the tibia with the insertion of the ligamentous tissues.

The condyle is composed of cancellous and hard bony tissue, the direction of the cancellated structure being perpendicular to the shaft of the femur—a point to which I desire to call particular attention, because this direction, although the best to give strength where force is applied directly in the perpendicular, necessarily weakens the resistance of this portion of the bone to force exerting traction in a downward direction on the tuberosity, the femur and the condyle presenting the counter force. At the upper part of the condyle, and situated nearer the posterior than the anterior part, is the tuberosity which gives insertion to the internal lateral ligament. This tuberosity is a point, a projection, an apophysis of bone, projecting at almost a right angle from the surface of the condyle, and is not to be confounded with the tubercle giving insertion to the adductor magnus muscle.

The internal lateral ligament Holden describes as "a broad, flat band which extends from the inner condyle to the inner side of the tibia." Gray describes it much more definitely and accurately: "a broad, flat, membranous band, thicker behind than in front, and situated nearer the back than the front of the joint. It is attached above to the inner tuberosity of the femur; below, to the inner tuberosity and inner surface of the shaft of the tibia to the extent of about two inches." The insertion of this ligament into the tuberosity, and not to the condyle, will be seen to have a very important relation to the subject under discussion.

The head of the tibia gives insertion to one end of the ligament, the space on each side of which, enclosing the joint, is filled with fibers of the capsular ligament. The surface of the condyle and the greater portion of the tuberosity are covered by fibers of the different ligamentous tissues about this part of the joint, and these different fibers are closely adherent to the bone.

It is a well-authenticated fact that ligament will bear more force than bone. Quain and Sharpey say: "The ligaments and tendons do not sensibly yield to extension in the strongest muscular efforts, and, though they sometimes snap asunder, it is well known that bones will break more readily," etc. And again: "The fibrous tissues are proportionately strong and alike inextensible; they will gradually yield, it is true, when the extending force acts slowly and for a long time, as when tumors or fluids slowly gather beneath them; but, perhaps, this gradual extension is accompanied with some nutritive change affecting the properties of the tissues." The comparative strength of bone and ligament is exemplified in the case of a Pott's fracture, where the internal malleolus more frequently fractures than the lateral ligament ruptures: and, again, in the case of Colles's fracture, when the force exerted in extending the band is transmitted through the ligament of the joint to the bone, with a consequent fracture. The strength of ligament is also shown in those cases of fracture of the patella where the force is an indirect one; and in fracture of the olecranon due to muscular action.

Before proceeding further, let us, then, clearly understand the following points: 1. The structure of the tuberosity and condyle is such as tends to weaken them when force is exerted in such a manner as to cause traction from above downward. 2. The ligament is inserted into the tuberosity and not into the condyle. 3. Ligament is stronger than bone. 4. In cases where force is exerted indirectly on bone through ligament, the bone usually fractures, and the ligament does not rupture. Would not these four points, and especially the last two, indicate that fracture of the tuberosity could occur, and not only could occur but probably would occur, before a rupture of any extent took place in the ligament?

The cause of this injury in all cases is some force tending to displace the leg outwardly while the thigh remains immovable, or, *vice versa*, the external condyle acting as the fulcrum.

I have been able to collect but two cases of so-called rupture of the internal lateral ligament of the knee joint; the first through the kindness of Dr. Bull, Attending Surgeon, and Dr. Wright, House Surgeon, to the Chambers Street Hospital; the second from Dr. C. H. Wilkin. Both cases it was my privilege to examine:

M. F., twenty-one years old, admitted March 31, 1879. She was brought to the hospital in an ambulance, suffering from an injury to her right knee sustained in falling from a first-story window to the bottom of the cellar steps below. On admission, she complained of considerable pain, especially severe on motion and manipulation. On examination, there was found to be enormous enlargement of the calf of the leg, probably due to contusion, great swelling and ecchymosis about the joint, and considerable pain localized on manipulation; the leg was extended and carried obliquely outward, causing very marked deformity; no crepitus but joint crepitus was obtained, and no mobility except in the neighborhood of the knee joint. Careful examination indicated rupture of the internal lateral ligament of the knee joint.

Two hours after admission, ether was administered, the deformity was reduced by extension and lateral traction, and a plaster-of-Paris splint was applied from the ankle to the upper third of the thigh. On April 5th the splint was cut up to the knee, as the swelling was rapidly subsiding, and the splint was overlapped and a roller bandage applied. On the 12th and 22d new splints were applied. On the 26th the patient was allowed to walk about the ward on crutches. On May 10th the plaster splint was removed, and a posterior leather one was applied. On the 19th all splints were removed, and a roller bandage was applied, the patient being directed to rub the leg with a stimulating embrocation. The leg was straight but slightly stiffened.

This case is remarkable because "no crepitus but joint crepitus was found," and secondly because of the length of time required for recovery and the method employed. In the subjoined case, also, "no crepitus but joint crepitus was found," and, further, in two of the cadavers experimented upon, where there was fracture of the tuberosity, no crepitus but joint crepitus was found. The cause of this absence of crepitus will be explained subsequently.

The second case was related to me by Dr. Wilkin: A man, about forty years of age, caught his thigh, just above the knee, between a skid and a bale of cotton which rolled against the inner side of the leg, forcing it outward. He came to the hospital, and, on examination, there was found swelling at the knee joint, with pain, somewhat localized, on motion and manipulation, and marked lateral movement of the leg toward the outside. A crepitus was found, but, as no point of motion was discovered except at the joint between the condyle of the femur and the head of the tibia, the crepitus was supposed to be joint crepitus, and called such. The treatment was conducted on the same principles as in the first case, with a like result, and the recovery of the patient with a slightly stiffened joint.

Could not the crepitus found in this and the previous case have been to some extent a bony one, supposed, however, to have been in the joint because "no point of motion was found except at the joint"?

The following are five cases in which an attempt was made to rupture the internal lateral ligament of this joint. The thigh was fixed, the power was applied to the leg just above the ankle, principally in a direction outward, and the fulcrum was at the external condyle.

In the first case, a right leg, the force was applied, and some considerable power was required before any lateral motion could be obtained. The joint was examined, and there was motion allowing of displacement of the leg about three inches outward at the foot. No crepitus except what was supposed to be joint crepitus was found, and no false point of motion at the situation of the internal tuberosity. On dissecting the tissues and exposing the joint, nothing abnormal was discovered—the ligament apparently, to examination by the eye, was not ruptured in the least; on displacing the leg outward, traction was made on the lateral ligament, and a point of motion, not very extensive, was seen at the situation of the tuberosity. On dissecting the ligamentous tissues from the condyle, it was found that *the tuberosity was separated, together with a scale of bone three quarters of an inch in diameter.*

The second and third experiments were conducted in the same manner. In the second, on examination, only slight lateral motion was obtained, and no crepitus (bony) or false point of motion could be distinguished; but, on the removal of the ligamentous tissues, it was found that the tuberosity, together with the inner portion or surface of the internal condyle, had been fractured, the line of fracture extending from just above the tuberosity downward and outward, the lower extremity of the line involving the cartilaginous surface of the condyle, about one third or one quarter of an inch from its internal border. Let it be noticed that in this experiment, as well as in the previous one, and in the two cases before recorded, *no crepitus but joint crepitus* could be distinguished, and *no* point of motion except directly at the joint could be discovered on manipulation.

In the third experiment it was found that bony crepitus (not very marked) and a false point of motion above the internal condyle did exist. On removing the superincumbent tissues, it was found that the internal condyle had been fractured, the line of fracture extending into the intercondyloid notch.

These experiments seem to prove that when the same force is applied to the cadaver which is said to cause rupture of the internal lateral ligament in the living subject, and the same physical signs are produced, there is actually no laceration of the ligament, but a fracture of the tuberosity to which it is attached.

The two other experiments were conducted on the cadaver of a child, probably about twelve or eighteen months old; in both cases crepitus and a false point of motion were discovered, pointing to a separation of the upper epiphysis of the tibia from the shaft. On exposing the joint, such was found to be the case.

The failure to discover crepitus and a false point of motion, in cases where the tuberosity is separated from the condyle, is easily accounted for by the fact, before mentioned, that fibrous tissues from tendinous expansions of the muscles, and from the ligaments of the joint, form a firm covering to the base of the tuberosity and the surface of the condyle, uniting the different portions firmly together and allowing of very limited motion indeed.

Reasoning from these experiments, is it not perfectly justifiable to conclude that fracture of the tuberosity may exist, and, further, that it does exist, in the great majority of cases of so-called rupture of the internal lateral ligament of the knee joint?

The conclusions at which we arrive regarding this class of injuries are the following:

1. Many cases of so-called rupture of the internal lateral ligament of the knee joint are in reality cases of fracture of the internal tuberosity of the condyle.
2. Many of the more severe sprains are fractures of the tuberosity.
3. The absence of bony crepitus is no certain sign of the non-existence of fracture at this part.
4. The diagnosis rests upon the extreme lateral motion, the severity of the pain on manipulation, the localized pain always found at a certain point, and the length of time required for complete recovery.

SOME CONSIDERATIONS ON INSANITY AND ITS THERAPEUTICS.

By EDWARD C. MANN, M. D.,

SUPERINTENDENT OF THE SUNNYSIDE RETREAT FOR MENTAL AND NERVOUS DISEASES.

Insanity is a cerebral disease, in which the person affected is prevented from controlling his thoughts, his feelings, or his conduct. We must bear in mind that the pathology of the disease of the mind establishes the fact beyond dispute, that there are forms of mental disease in which, though the patient is quite aware he is about to do wrong, the will becomes overpowered by the force of irresistible impulse. The power of self-control, in these cases, is either destroyed or suspended by mental disease.

Respecting these cases we may briefly state that homicide is not criminal if the person by whom it is committed is, at the time when he commits it, prevented by any disease affecting his mind from controlling his own conduct. Respecting the subject of testamentary capacity, about which the family physician is not unlikely at some time to be asked for his opinion, it is my conviction that the mental unsoundness of a man, if unconnected with the testamentary disposition, ought not to destroy testamentary capacity. If the will of a person is not affected by, or is not the product of, an insane delusion, it should be regarded as valid. Delusions *per se* should not, I think, render a will void. A person may be a monomaniac, and yet have sufficient mental capacity to make a valid will. In such a case the mental faculties are often unimpaired and undisturbed. The most important point to be looked into is, *whether the testator has ignored natural affection and the claims of near relationship in the making of the will in question.* The testator's mental faculties must be so far normal that he shall understand the nature of the act and also the consequences of it, and he must also have *a clear idea as to the amount of property which he is disposing of.* There must be a clear, sound moral sense, and the human instincts and affections must be intact. There must be no insane suspicion or aversion, and no loss or impairment of reason and judgment. A person should not be considered capable of making a valid will if the act in question has been the product of, or has been actuated or influenced at all by: (1) hereditary taint which has influenced his volitions, impulses, or acts; or (2) mental disease, or insanity, which has weakened, perverted, or destroyed the mental functions.

In the study of disease of the mind, we, as physicians, are interested in the whole history of our patient and his ancestry, and we search for the causes of any bodily and mental changes that we find, and thus arrive at the true pathology of the disease, while the lawyer and jurist are mainly interested in the *existence* of mental disease, its *degree*, and its *influence on conduct.* There are some facts of equal interest to the physician and the jurist in diseases of the mind and nervous system. Thus, epileptics are to be classed in the most homicidal group of all insane criminals, or those likely to become so. Puerperal women and women at the climacteric period are subject at times to dangerous delusions; and kleptomania is a peculiarity of a certain number of cases of general paralysis. These facts are classical, and should so be regarded by physicians and judges alike.

The elementary disturbances of the cerebral functions which we meet with in our clinical studies in psychiatry involve processes in the emotional sphere; processes in the sphere of the conceptions, comprising the reason, memory, and phantasy; and, finally, processes in the psycho-motor sphere, the impulses and the will. Among *emotional* disturbances we find the two extremes of morbid depression and morbid exaltation, and also the conditions of abnormal excitability and abnormal absence of emotion. The morbid processes in the *conceptional* sphere involve and affect the duration, association, intensity, and reproduction of conceptions, and also comprise the delusions of the insane, or false conceptions. The morbid processes met with in the *psycho-motor* sphere cause the diseased propensities for food characterizing the insane, and the refusal of food by melancholiacs; affections of the sexual propensities, either loss or abnormal excitation; the various morbid impulses associated with insanity; also disturbances in speech.

We have elementary disturbances of consciousness in diseases of the mind, such as epileptic states, ecstasy, somnambulism, various states of altered consciousness, and the bewildered state of mind in paralytic dementia. We have also sensory disturbances, as anæsthesia and hyperæsthesia; motor disturbances; vaso-motor disturbances, such as cerebral anæmia, cerebral hyperæmia, venous stasis, and œdema of the cortex, and a great many changes in arterial tension, resulting in sudden cardiac disturbances in the insane. We have also trophic disturbances, such as the herpes and rhagades of melancholiacs and patients with dementia; abnormal pigmentations, etc. We find also many anomalies of the vital functions—the animal heat, the pulse, digestion, assimilation, respiration, general nutrition, and sleep.

I do not consider that women are more liable to diseases of the mind than men. It is apparently so, from the fact that there are more females than males in our asylums; but females who are insane exhibit a lesser mortality than the male insane, and they therefore accumulate in large numbers.

Respecting the cause of insanity among Americans to-day, I do not hesitate to say that inheriting a delicate nervous organization, far in excess of physique as a rule, gives rise in modern society to a great increase of the neuropathic constitution. I have found *overstrain of the brain and excessive use of stimulants* to be the two principal causes of insanity and also of diseases of the nervous system generally. For a moral cause to produce insanity seems to me to necessitate an organic predisposition to it, although no doubt sometimes a nutritive disturbance of the brain may be produced by shocks to the nervous system, which may result in mental disorder in a previously healthy person. This, I think, however, is a rare occurrence.

As forms of insanity of a curable nature, I would mention melancholia, mania, and primary dementia, while among the secondary, incurable conditions of mental disorder are chronic mania and terminal dementia. We have also to deal with moral insanity, *folie raisonnante*, the monomanias, epileptic insanity, hysterical insanity, which may be complicated with epileptoid states, mania and melancholia; hypochondriasis; periodical insanity, under which state dipsomania ranks, and also mania, melancholia, and circular insanity; and, finally, we meet with cerebral diseases with psychical symptoms predominating, such as paralytic dementia, or progressive paresis, cerebral syphilis, and chronic alcoholism, with its complications; also senile dementia and acute delirium.

Respecting the therapeutics of diseases of the mind, I regard it as good practice to give five to ten grains of calomel to begin treatment, followed by salines, which prepare the system for whatever after-treatment is indicated. For an overworked business man, on the verge of insanity, whose whole system is probably disordered, in whom anxiety has caused loss of appetite and inability to sleep, and in whom the integrity of the nervous system has been gradually deteriorating for some time, as well as for patients whose conduct and conversation are beginning to attract attention, such an initial treatment as I have described, followed by the adimnistration of thirty grains of bromide of sodium and thirty drops of tincture of cannabis indica thrice daily, in combination with warm baths at bedtime, cold affusions to the head, and galvanization of the brain (which latter controls the cerebral congestion), will be found by the profession, as I find it in the treatment of such cases at my private retreat for mental and nervous diseases, to be followed by prompt and gratifying recoveries. Many such patients are far better in their own homes, treated by this plan, than when carried away from home to an asylum, where, instead of *rest*, which is one of the great therapeutic reliances in early mental disease, the patient is soon an asylum-made lunatic.

I do not at all underrate the good work done at our asylums by some able men, but I contend that I can cure a patient in his own home, in the inception of insanity, or by taking him into my own family, in a much shorter time than I could cure the same patient by the use of precisely the same means when that patient was subjected to the depressing idea that he was in an asylum, where there were patients, perhaps, in the same ward who had been and who would be there for years. Such surroundings can not fail to depress a patient coming from a home of luxury and comfort.

In acute mania I am inclined to think that either opium or morphine increases excitement, and that hyoscyamine is a great deal better. Where there is exhaustive mania, with high excitement and cerebral anæmia, wine or brandy I have always found to be the best calmative and soporific. I have often induced and kept up sleep for hours by the administration of half an ounce or an ounce of fine old whisky, but I always give the whisky with a carminative, so that the patient may not know what he or she is taking. Food must be given regularly and systematically, to support strength and prevent exhaustion. A pulse of 150 will come down to 80 under this stimulative treatment in exhaustive mania, and a quiet, refreshing sleep and a good recovery will result. I think chloral hydrate should be used very carefully, and I never give more than fifteen grains at a dose, generally combining it with sodium bromide and hyoscyamus, repeating at intervals of two hours until I get the effect I desire.

Nurses have to be very carefully watched, lest, in caring for patients suffering from melancholia, they neglect to prevent the refusal of such food as is really needed for the support of the patient. I do not believe in slops for food in mental disease, but want my patients to have positive food—milk, eggs, beefsteak, lamb, and well-cooked vegetables and fruits. *Rest* and *nourishment* are my two main reliances, and if we add to these two a third, namely, *sleep*, we can by judicious treatment cure any curable case of insanity. Restraint, I think, is grossly abused; and yet there are cases in which the camisole, a soft canvas jacket, which is all the restraint ever necessary in any case, is temporarily needed; but this should never be intrusted to the option of a nurse.

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A CASE OF EXOPHTHALMIC GOÎTRE; RECOVERY UNDER ELECTRICAL TREATMENT.

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In my third edition of Beard and Rockwell's "Treatise on the Medical and Surgical Uses of Electricity" will be found a new chapter devoted to the subject of exophthalmic goître in its relations to electrical treatment. In that chapter I recorded eight cases, with three recoveries and one approximate recovery. Of the remaining four patients, all received benefit, so far as regarded a modification, more or less marked, of the heart's action, while in two of them the goître decreased somewhat in size. A fifth case of recovery has been recorded in another place,* and I now have the pleasure of giving the details of still another, making six recoveries out of a total of ten cases.

It would, I am quite sure, be impossible to obtain similar results in a given number of cases through any one method of electrical treatment. In some cases localized galvanization by the ordinary method may prove efficacious. This method may be thus described: Place the cathode over the cilio-spinal center, above the seventh cervical vertebra, and the anode in the auriculo-maxillary fossa, gradually drawing the latter (after a few moments of stabile treatment) along the inner border of the sterno-cleido-mastoideus muscle, to its lower extremity. The second step in this process consists in removing the anode to the position occupied by the cathode, and placing the latter over the solar plexus, using for a few moments longer a greatly increased strength of current. In other cases currents alternately increased and diminished may prove most effective, as I have practically demonstrated.

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* "Lectures on Electricity as related to Medicine and Surgery," by A. D. Rockwell, M. D. New York: William Wood & Co.

Last, but not least, the general application of the faradaic current sometimes proves an important factor in the method of treatment. It is not very difficult to believe, nor to understand why, general faradization is so effective in lowering a pulse that is rapid as a result of nervous excitement, and in increasing its strength when it is both rapid and weak through nervous exhaustion. It is more difficult to explain why this result is so pleasantly obtainable in cases of exophthalmic goître where the galvanic current, after benefiting up to a certain point, fails to do more. The faradaic certainly does not affect the sympathetic so directly and powerfully as does the galvanic current, and we are obliged, for an explanation, to refer to its well-known superior tonic properties, and to the fact that the complete and thorough excitation of the cutaneous nerves by general faradization is followed by a greater and more desirable reflex influence.

In a case of over thirty years' standing, which I recently treated, but in which I failed to cause any appreciable reduction in size, this power of one current to supplement the action of the other was well illustrated. The pulse of the patient was constantly at or above 115. The action of the galvanic current reduced it to 105, but failed to do more than this after considerable effort. General faradization was then attempted, with the result of effecting within a week a further and seemingly permanent reduction of twelve beats. At the same time the general condition of the patient was improved greatly.

Case.—Mrs. G. H. W., aged thirty-two, of slight build and delicate constitution, came to me with the following appearance and history: The eyes were quite protuberant, and the heart's action was rapid and irregular, the pulse-beat never falling below one hundred, and sometimes mounting as high as one hundred and thirty. The thyroid enlargement might, in general terms, be said to be of about the size of a small orange, and was remarkably soft to the feel, and pulsating in character.

All her life, up to within two years, her health had been more rugged, but at that time she suffered from what she termed "malaria," and subsequently, on a cold spring day, was caught in the rain, and stood for over an hour with wet feet. Her menses failed to appear, and she had "seen" nothing up to the time of my interview with her. The various symptoms of exophthalmic goître began to show themselves within six months, and appear to be increasing. Regularly every month all the symptoms became aggravated; there is greater protrusion of the eyes, the goître swells, and the average pulse-beat is quicker.

It was very easy to believe that these symptoms were in a measure, if not wholly, dependent upon the sudden cessation of the menstruation. General faradization, which is frequently very useful in amenorrhœa, failed in this case, and internal applications were resorted to. After the third attempt, menstruation appeared with more than the usual flow, followed by a most gratifying alleviation of all the symptoms.

It is possible that the menses might have been excited in this case by internal medication, with the same immediate amelioration of symptoms. Excitation of menstruation proved, however, not to be a cure, although the patient seemed to think it all that was necessary, since she absented herself until after the next period, which came on normally, but was followed by no further change in her condition.

There were yet marked ocular protrusion, swelling of the thyroid, and rapidity of the circulation. I now alternated the general treatment with local applications of the galvanic current, with the result, after some twenty-five *séances*, of an entire disappearance of the exophthalmus. The pulse was reduced to nearly its normal activity, while the thyroid enlargement finally ceased to pulsate, and was reduced to less than one half its former size, becoming—through a probable hyperplasia of the glandular tissue taking the place of the dilated vessels—quite firm and hard.

NOTE ON SURFACE ELECTRODES.

By FRANK P. FOSTER, M. D.,

PHYSICIAN FOR DISEASES OF WOMEN TO THE OUT-PATIENT DEPARTMENT OF THE NEW YORK HOSPITAL.

It seems not a little incongruous, in these days of Listerism and the consequent minute attention to cleanliness in the manipulation of patients, that the sponge or chamois wrappings of the electrodes usually furnished with a battery at the time of its sale are seldom removed, but are used over and over again, upon all sorts of patients, the cleanly and the filthy alike, soaked and re-soaked, imbued, as they must necessarily be, with the secretions from many a cutaneous and mucous surface, until they are finally discarded as worn out, but not until they have become abominably dirty. There is a tradition in one of our large hospitals that, several years ago, a member of the governing board of the institution expostulated with the apothecary on what seemed to him the inordinate number of leeches used in the house. "I have been told, sir," he said, "that a leech may be so treated as to be fit for use a second time. Is that true? If it is, why do you not treat your leeches in that way?" The apothecary replied, "It is true, sir, but how would you like to have applied to your gum-boil a leech that had shortly before been on a bubo?"

Ordinary electrodes, it is true, produce no traumatism, so that systemic infection through their instrumentality is scarcely to be apprehended, provided, at least, we limit the proposition to their application to the unbroken skin. Remembering, however, that this limitation does not always hold good, and that, even when it does, there are various cutaneous parasites apt to be conveyed from one patient to another, it will be seen that the cleanliness of electrodes is a matter of prudence rather than of mere fastidiousness.

How, then, shall it be secured? Simply by providing separate coverings for use with each patient, and by choosing electrodes so fashioned that the coverings may easily be removed from them, and others applied. A very common form of electrode consists of a disk of metal, with the shank attached at its center. The disk is usually thin, so that whatever covering is applied over it has to be secured around the shank. When this is the case, it is almost necessary to resort to the tedious and vexatious process of winding and tying with a string. It is best, therefore, to choose thick electrodes, grooved at the edge. In this groove a rubber band will lie, and thus the application of fresh coverings becomes a mere matter of laying on a piece of flannel, chamois, felt, or the like, and slipping an elastic band over it.

The coverings that are used with any particular patient may be kept in an envelope, or other convenient receptacle, upon which the patient's name should be written. Felt is an excellent material for covering electrodes, for it readily imbibes water, and keeps wet for a long time. Indeed, so long does it remain moist that in warm weather it is apt to become moldy within a few hours, unless it is left exposed in a dry place after having been used. Such exposure is advisable also for another reason—if the wet coverings are at once put back into the instrument case, the water that evaporates from them may rust any articles of steel that the case may contain.

In regard to roller electrodes, the use of which is very convenient for labile applications, the handle should be so constructed as to be readily separable from the roller. I have never seen an unobjectionable roller electrode in the shops, but I have one, of Trouvé's make, which I have so modified that it answers the purpose very well. I am inclined to think, however, that an equally efficient and convenient roller could be made, at much less cost, from a section of a coil of stiff wire. Whatever material is used, the roller should be of ample diameter (not less than two inches, I think), and the frame by which it is attached to the handle should not be bulky; otherwise the frame is apt to score the patient's skin if much pressure be made, as is sometimes desirable. Coverings for the roller may easily be made by sewing the side edges of a strip of flannel together, so as to form a tube of proper caliber to fit the roller.

It is often convenient to place one of the electrodes beneath the patient's person. To allow of such use an electrode must necessarily have its shank at the border. It should also be thin, so as not to cause pain by its pressure. It is out of the question, then, to have it grooved around the border for the reception of an elastic band. Any one, however, can make an electrode that will do away with this difficulty. Take a piece of copper wire, about three yards long, small enough to be bent quite easily; fold it upon itself at the middle, and then make a flat coil of the double wire, beginning at the loop end; stop the coiling process when you get to within eight or ten inches of the free ends of the wire. This straight portion may constitute the shank, and it is desirable to insulate it, which may be done by slipping a piece of rubber tubing over it. The tubing should be an inch or so shorter than the wire shank, and should be run close up to the coil. One of the free ends of the wire may be bent sharply and turned inside the tubing. The other end of the wire may be bent somewhat, to prevent the tubing from slipping off, but should be left uncovered, as by it the connection is to be made with the handle.

How is this connection to be managed conveniently? A year or two ago my friend Dr. Piffard showed me a clever device of his in the way of a needle-holder for electrolysis. It was simply a microscope needle-holder, such as is to be had of any optician at a very low price, to the handle of which he had had a binding post attached, by which a conducting cord could readily be fastened. It suited my convenience to alter this arrangement in some trifling degree by doing away with the binding post. I had the wooden portion of the handle removed from one of these microscope needle-holders, and a screw-thread cut on the metallic portion, to fit the so-called "universal handle." Whoever uses various sorts of electrodes will certainly find it a matter of convenience to have a pair of these handles. As to the needle-holder, it not only answers admirably for electrolysis, but serves equally well to clamp the free end of the wire forming the coiled electrode above described. Little flannel bags may be made to serve as covers for such electrodes. It is obvious that, with a little ingenuity, various special forms of electrodes may be made of wire, with little expense and trouble. It does not fall within the scope of this note, however, to treat of any but the ordinary forms.

Editorials.

OBSTETRICS AND GYNÆCOLOGY IN THE JOURNAL.

Several gentlemen of eminence in obstetrics and gynæcology having expressed a wish that greater prominence should be given to those branches of medicine in this journal, and that the fact should find explicit expression in the shape of a supplementary title, we have decided, after due consideration, that such a course would be acceptable to our readers, and would conduce to the accomplishment of the legitimate aims of the journal. Obstetrics and gynæcology are so interwoven with the general practice of medicine, and constitute so large a part of it, that the propriety of presenting their literature in considerable fullness to general practitioners can scarcely be questioned. It is thought that, on the one hand, the monthly publication of what is current in these specialties will be of greater interest to obstetricians and gynæcologists than its appearance at longer intervals; and that, on the other hand, the insertion of such material in a journal of general medicine will cause it to reach the mass of the profession to a greater extent than it is likely to do in the pages of a periodical of strictly special scope.

Beginning, then, with the next number (the first number of Vol. XXXIV), the title of this journal will be: "The New York Medical Journal and Obstetrical Review." While it will still be a journal of general medicine, obstetrics and gynæcology will figure in its pages more largely than heretofore. We have received assurances from the greater number of our most prominent obstetricians and gynæcologists that they will contribute original articles in those branches; reports on the current literature of obstetrics and gynæcology will be given monthly, instead of quarterly as at present; and we shall give the proceedings of societies, so far as they bear upon these subjects, with greater fullness than heretofore.

MEDICAL LECTURERS AND THE LAW OF COPYRIGHT.

The Messrs. Putnam, the publishers of Darling and Ranney's "Essentials of Anatomy," announce that a suit brought by them in the Supreme Court of the State of New York to enjoin the publication of a volume issued by Dr. Leo T. Meyer, under the title of "A Guide to the Study of Anatomy," has been decided in their favor.

Some publicity has been given to the facts in the case, and it is not our present purpose to allude to them; but the questions that were at issue are, as the Messrs. Putnam state in a note that we have received from them, of no little importance to the medical profession, involving as they do: 1. The right of lecturers to retain full property in material which has been publicly delivered in the form of lectures. 2. The value of a verbal permission "to print" as affecting a formal contract "to publish."

The following are some of the decisions cited by the plaintiffs' counsel as bearing upon the law of the case: "When a literary work is exhibited for a particular purpose, or to a limited number of persons, it will not be considered as a general gift or authority for any purpose of profit or publication by others. . . . The rights of an author of a drama in his composition are twofold. He is entitled to the profit arising from his *performance*, and also from a *sale of the manuscript*, or the *printing and publishing it.* Lectures and plays are not, by their public delivery or performance in the presence of all who choose to attend, so dedicated to the public that they can be printed and published without the author's permission. It does not give to the hearer any title to the manuscript, or a copy of it, or the right to the use of a copy. The manuscript and the right of the author therein are still within the protection of the law, the same as if they had never been communicated to the public in any form." (Allen, J., in Palmer *vs.* De Witt, 47 N. Y., 543.)

"The right of an author before publication we may take to be unquestioned, and we may even assume that it never was, when accurately defined, denied. He has an undisputed right to his manuscript; *he may withhold it or may communicate it, and, communicating it, he may limit the number of persons to whom it is imparted, and impose such restrictions as he pleases upon their use of it. The fulfillment of the annexed conditions he may proceed to enforce, and for their breach he may claim compensation.*" (Lord Brougham, in Jefferys *vs.* Boosey, 4 H. L. C., 962.) This is quoted approvingly by Judge Clifford, in Parton *vs.* Prang, 3 Cliff., 548.

"Again, if an author chooses to impart his manuscript to others without general publication, he has all the rights for disposing of it incident to personalty. He may make an assignment, either absolutely or qualified in any degree. He may lend or let or give or sell any copy of his composition with or without liberty to transcribe, and, if with liberty to transcribe, he may fix the number of transcriptions which he permits." (Erle, J., in Jefferys *vs.* Boosey, *supra*, 867.)

Abernethy, the distinguished surgeon, sought to restrain the publication in the "Lancet" of unpublished lectures which he had delivered at St. Bartholomew's Hospital in London. Lord Eldon said that he was "clearly of opinion that when persons were admitted as pupils, or otherwise, to hear these lectures, although they were orally delivered, and although the parties might go to the extent, if they were able to do so, of putting down the whole by means of shorthand, yet they could do that only for their own information, and could not publish that for profit which they had not obtained the right of selling." (Abernethy *vs.* Hutchinson, 1 Hall & Tw., 40.)

"The student who attends a medical lecture may have a perfect right to remember as much as he can, and afterward use the information thus acquired in his own medical practice, or to communicate it to students or classes of his own, without involving the right to commit the lecture to writing for the purpose of subsequent publication in print or by oral delivery." (Hoar, J., in Keene *vs.* Kimball, 16 Gray, 551.)

"The delivery of a lecture to a public audience, or the preaching of a sermon by a minister to his congregation, does not work a forfeiture of the common law right of property in a lecture or sermon. The cases seem to recognize the distinction between a general and unrestricted publication, which works a forfeiture of this right, and a qualified or limited publication, which has no such result." (Van Brunt, J., in Kiernan *vs.* Manhattan Quotation Telegraph Co., 50 How. Pr. R., 201.)

In congratulating the Messrs. Putnam upon the termination of their suit, we may express the hope that the decisions bearing upon the points at issue may be turned to account by medical lecturers for their own protection. There can be no doubt that many a clinical lecture has been published against the wish of the lecturer and to the detriment of his reputation. From an ethical point of view there has never seemed to us to be the slightest doubt that anything uttered in the way of a medical lecture, or read as a paper at a society meeting, or spoken in debate at such meeting, should not be published, even in abstract, without an opportunity being afforded the author to revise it or to object to its publication at all. Now that the law of the matter has been shown to be at one with its ethics, we trust that lecturers and speakers at society meetings will muster the courage to enforce their rights. By so doing they will also guard the profession against being misled by inaccurate reports.

From time to time we receive communications, generally on postal cards, from persons wholly unknown to us, asking how much we will give for a report of a clinical lecture by this, that, or the other professor. We invariably decline such offers, but we can not avoid the conclusion that much of this matter finds its way into print—such drivel do we find attributed to men whose scholarly attainments are well known, and who never talk without saying something.

There are circumstances under which, it seems to us, a lecturer or a reader at a society meeting should feel bound in honor to enforce the right which, as is now made plain, rests with him to prevent the indiscriminate publication of his discourse. Such circumstances are these: A lecture or a paper is offered to a medical journal for publication, and is accepted. It then occurs to the author that he can, without much further exertion, make good some half-forgotten promise to read a paper before some society *some time.* He reads this same paper, perhaps from proof-sheets furnished by the journal. A stenographer takes notes, and a hastily-prepared report appears in another journal, in advance of the publication of the paper in the journal originally treated with, whose editor, it is quite likely, has taken great pains to insure the accuracy of the version that is to appear in his journal. The journal that anticipates him is likely to be credited with the article by other publications that notice it. Now, this is a manifest injustice, and we are sorry to say that it is an injustice that is sometimes connived at by the author—unthinkingly, no doubt, in most cases.

THE ALUMNI ASSOCIATION OF THE COLLEGE OF PHYSICIANS AND SURGEONS.

From the report of a committee, appointed by the councilors, on the history and present condition of the association, which was organized in 1859, we learn that for the first five years the annual meetings were purely social, the retiring President giving interest to the occasion by a formal address. The idea that the association should become a practical coadjutor in the educational work of the college may be said to have had its birth at the annual meeting in 1864, when it was resolved to substitute for the oration an annual prize for the best medical essay, submitted in competition, by an alumnus of the college. For two years a prize of $100 was offered by members of the association, but, at the annual meeting in 1866, a fund was raised, which has since been known as the "Alumni Prize Fund." The interest of this fund has yielded, during the past fourteen years, prizes varying from $100 to $500.

In 1872 the association was incorporated, and at that time an effort was begun to raise a fund for the equipment and endowment of a pathological laboratory, to be known as the "Alumni Pathological Laboratory," and to be established as a part of the curriculum of the college. Since the incorporation of the association, says the report, each year has shown an increasing interest in its work, and substantial progress in the accomplishment of its object.*

The alumni prize fund now amounts to $5,075, most of it being invested in bond and mortgage on city property, bearing interest at six per cent. At the annual meeting in 1879 it was resolved to change the alumni prize from an annual to a biennial one, because it was thought that a large prize would excite a livelier competition, and secure more valuable contributions than a smaller sum. The committee believe that the wisdom of this change will be justified by the results, and they earnestly hope that the alumni prize fund may be still further enlarged. With the diminishing rate of interest for all permanent and secure investments, the present fund of $5,000 can hardly be expected, they remark, to yield a sufficient income in the future for a biennial prize of $500.

The pathological laboratory fund, amounting to $17,871·68, is invested as follows: $10,000 in New York City Consolidated Stock, at five per cent.; $6,000 in a City Bond and Mortgage, at six per cent.; and the balance in trustworthy savings banks in this city. In 1878 the councilors deemed it wise to abandon the original plan of accumulating a fund of $100,000 before attempting to establish a pathological laboratory or a chair of pathological anatomy, and it was determined to found a laboratory on a small scale at once. This was made practicable by the generous coöperation of Professor Delafield, who volunteered his services as director of the laboratory. A room was secured in the college building at a moderate rent, and $1,500 was expended in adapting the room to the purposes of a laboratory, and in equipping it with microscopes, instruments, and materials. Since the opening, in October, 1878, one hundred and eighty students have received instruction and practical training in the study of pathological histology. The students are charged a small fee for the course, and the sum of these fees, with the interest of the fund, as at present invested, has served to sustain the laboratory, and pay a small salary to an assistant director.

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* The report gives the following list of the prizes awarded since 1866, the titles of the essays, and the names of the authors: In 1866, a prize of $100 was awarded for the essay on "What Effect has the Meat or Milk of Diseased Animals on the Public Health?" by Dr. S. R. Percy. In 1868, a prize of $100 was awarded for the essay on "Atropia," by Dr. S. R. Percy. In 1870, two prizes were awarded: one of $100, for the essay on "Oxygen Gas as a Remedy in Disease," by Dr. A. H. Smith; and a second of $100, for the essay on "The Ossicles of the Ear," by Dr. A. H. Buck. In 1872, a prize of $200 was awarded for the essay on "Animal Vaccination," by Dr. F. P. Foster. In 1873, a prize of $100 was awarded for an essay on "The Effects of High Atmospheric Pressure, including the Caisson Disease," by Dr. A. H. Smith. In 1874, a prize of $100 was awarded for an essay on the "Mechanism of Hearing," by Dr. A. H. Buck. In 1876, a prize of $400 was awarded for the essay on "The Structure and Development of Connective Substances," by Dr. Thomas E. Satterthwaite. In 1877, a prize of $250 was awarded for the essay on "A New and Simple Method for the Quantitative Estimate of Urea," by Dr. George B. Fowler. In 1880, a prize of $500 was awarded for the essay on "The Effect of Willed Muscular Effort on the Temperature of the Head, a New Study of Cerebral Cortical Localization," by Dr. R. W. Amidon.

The pressure of his other duties will no longer permit a continuance of Dr. Delafield's services as director, and in future it will be necessary for the association to assume the entire responsibility of carrying on the work of the laboratory, says the report. The trustees of the college, by the advice of the faculty, have remitted the rent of the room, but the association must provide for the salary of a competent director, and for the incidental expenses of the laboratory.

To do this the interest of the fund is not sufficient, and annual contributions from the alumni have been solicited to meet the deficiency. The committee believe that there will be no difficulty in raising an ample income by subscription, to make this undertaking a substantial success.

We understand that the subscriptions obtained from those present at the alumni dinner on the 14th of May give assurance that the association will, for the time being, at least, have sufficient resources at its command to keep up the work at the laboratory. This work should on no account be allowed to languish for want of funds, and we trust that the danger of any such contingency may soon be wholly done away with, whether by subscriptions on the part of the alumni, or by contributions from men of wealth who may feel disposed to follow the example of the late Mr. Benjamin Cartwright.

Mr. Cartwright's legacy of $10,000 provides $5,000 for the foundation of an annual course of lectures, to be known as the "Cartwright Lectures," and $5,000 for an annual or biennial prize, open to the profession, for the best essay on a medical or surgical subject, presented in competition to the Alumni Association of the College of Physicians and Surgeons. This fund is invested in a city bond and mortgage, bearing six per cent. interest. The Cartwright lectures will be delivered annually, but it has been decided to make the "Cartwright Prize" a biennial one, alternating with that of the alumni, so that a prize of $500 may be offered annually.

Reviews and Literary Notes.

Clinical Lectures on the Physiological Pathology and Treatment of Syphilis, together with a Fasciculus of Class-Room Lessons covering the Initiatory Period. By FESSENDEN N. OTIS, M. D., Clinical Professor of Genito-Urinary Diseases in the College of Physicians and Surgeons, New York, etc. New York: G. P. Putnam's Sons, 1881. Pp. xvi–116. [Price $1·75.]

DR. OTIS's lectures are interesting chiefly on account of the elaborate, decided, and to a certain extent original views which they contain regarding the pathology of syphilis. The theory which the author enunciates may be briefly stated as follows: The morbific agent of syphilis is a degraded animal cell. Such a degraded cell or disease germ, while retaining its power of amœboid movement and of reproduction, may not exceed $\frac{1}{100000}$ of an inch in diameter. When the germ is brought into contact with an abraded surface in a healthy subject it meets a white blood cell in one of the lymph spaces, and by mutual amœboid movements becomes incorporated with the substance of the cell and imparts to it its own morbid characters. By virtue of these latter a rapid proliferation of similar cells ensues, which have a low formative power, though morbidly active in reproduction. The cells accumulate at the point of incubation, the local proliferation being favored by coagulation in the lymph spaces or radicles, which hinders the escape of the cells with the lymphatic current. The accumulation slowly increases and advances till it arrives at the nearest lymphatic vessel, this period constituting the first incubation. The length of this period is dependent upon the distance of the point first infected from a lymphatic vessel. As soon as an open lymphatic channel is reached, the infected cells are carried in the lymph current to the nearest lymphatic gland. Here they are detained for a time corresponding to the second incubation. The term "incubation," however, is discarded by the writer because it is associated with the hypothesis of a fermenting or maturating contagious poison. Etymologically, we do not see why the word is not perfectly adapted to the writer's theory. The expression "initiatory period of syphilis" is substituted.

The cells having finally traversed the lymphatic system and entered the general circulation, the altered composition of the blood is first evinced by its effect upon the sympathetic system, causing a paralysis of certain of the cutaneous vaso-motor nerves, with the production of an erythema—the "roseola syphilitica." This eruption, therefore, is regarded rather as a concomitant or accidental symptom of the disease than as a true syphilide. It is compared to the erythemata due to gastric disturbance or to certain drug exanthems. The next event is the appearance of the syphilides proper. This phase in the course of the disease is characterized as "the period of localized cell-accumulations." The circulation of the blood in the papillary bodies .of the skin is supposed to encounter normally a certain resistance owing to the spiral arrangement of the capillary loops. Hence congestions or stases are peculiarly liable to occur here. At these points, the writer claims, the white blood corpuscle of syphilis would be especially apt to wander from the capillaries. "Its exudation into the tissues is favored," he says, "both by the natural process of exudation and by the amœboid power of the disease germ or morbidly active white blood cell. For, in the stases incident to this locality, these cells '*first essay their amœboid mobility, then to division.*'* These predisposing forces and conditions, with the proliferation and accumulation of cell material, and a separation of the fibrine from the lymph, resulting in a distinctly recognized hyperplasia of the papillæ cutis, cause the papules of syphilis to appear as a logical sequence." The process is essentially a reproduction of that which took place in the initial lesion. Presumably, similar processes occur elsewhere than in the skin.

During this period it is the lymph cells which are the sole agent and source of contagion. Gradually their morbid properties disappear, and the disease syphilis is properly at an end. Now follow the "sequelæ"—affections comprised under the general name of tertiary syphilis. For these the author has fixed upon a very specific and original pathogenesis. The infiltrations which constitute the "gumma," and which form the basis of all the various lesions of tertiary syphilis, are not inflammatory and hyperplastic products, but are simple passive accumulations of normal nutritive material. While the cell accumulations of syphilis proper consist of abnormal elements—cells which are diseased and have been exuded in abnormal excess from the capillaries, in consequence of the morbid activity of their amœboid movements—the growths of tertiary syphilis comprise only normal germinal cells which have been supplied to the tissues in the ordinary course of growth and repair. It is maintained that such cells are always supplied by the capillaries in excess of what is required for the nutrition of the part, but that in a normal state of the absorbents the superabundance is conveyed away by means of the lymphatic vessels. Now, it is supposed by the author that the cellular accumulations which occur as sequelæ of syphilis owe their origin to the fault of the lymphatic vessels. "It appears to me," he says, "that, inasmuch as it has been shown that the lymphatic spaces and vessels are primarily and chiefly affected and obstructed during the active stage of syphilis, it is not unreasonable to infer that damage *might* have occurred to those spaces and vessels during the active period of syphilis, which, if properly investigated, would lead to the true explanation of the failure of that system to return to the general circulation the germinal material exuded." The "damage" referred to causes a development of new connective tissue in the walls of the lymphatic vessel which in time—perhaps ten, twenty, or forty years afterward—contracts, so as to obstruct the caliber of the vessel and give rise to a gummy tumor. Thus all the lesions of the tertiary period are accounted for. Even such effects as the obliteration of arteries in the brain are referred to a primary obstruction in the lymph spaces of the adventitia, which gives rise to a deposit that becomes organized and then undergoes contraction.

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* American edition of Rindfleisch.

Thus, according to Dr. Otis's theory, the lymphatics assume a degree of importance in the pathology of syphilis never assigned to them before. Many of the author's views, however, differ but little from those held by other writers. So far as relates to the propagation of the disease, the hypothesis that the contagious principle inheres in some form of living matter, be it a fungus, a formless particle of bioplasm, or a diseased or degraded human cell, has no lack of supporters. Everything in the history of syphilitic infection seems to point to a gradual growth of a morbid material in the tissues where it is first implanted, and where it slowly increases until by some means it effects an entrance into the general circulation; there infecting the entire mass of the blood, and giving rise to the symptoms of constitutional syphilis.

The suddenness with which the signs of general infection manifest themselves after a lengthened period of incubation seems to preclude the idea of a gradual contamination of the blood, or of a general and immediate infection at the time of inoculation. Accepting the supposition that the morbific agent or vehicle of the disease is the white blood- or lymph-cell which escapes through the capillary walls by diapedesis, it is not easy to see why such a cell, after it has become infected, may not reënter the capillary vessel in the same manner as it emerged, traverse the veins, and thus return to the general circulation. Biesiadecki found the thickened walls of the capillaries infiltrated with nuclei, many of which projected "even into the lumen of the vessels." But, if any infected cells or nuclei do so directly return to the general circulation, no ill consequences appear to follow. Perhaps in such small numbers they undergo rapid disintegration in the blood current, as is known to be the fate of many of the white cells even in health.

But the infected cells would also have ready access to the lymphatics, and the very evident implication of this system during the early period of syphilis gives color to the inference that it is by way of the lymphatics that the poison reaches the general circulation. It is reasonable to suppose that certain cells in the periphery of the proliferating growth which constitutes the chancre may become disengaged and be swept onward in the lymph current to the nearest lymphatic gland. Here they would be arrested in the afferent vessels or in the narrow canals of the gland, till they effected contamination of the lymphatic follicles. These latter, by active proliferation, would discharge multitudes of new infected cells into the efferent vessels, whence they would be carried to the next gland in order, with a like result, and so on to the receptaculum chyli, till finally they reached the blood. How many of the original cells from the initial lesion succeed in traversing all the glands is uncertain. The great majority of the infected cells which reach the blood by the lymphatics are doubtless supplied by the successive glands, each of which in turn would act as a distinct focus of infection.

With this theory, which is by no means new, Dr. Otis differs only in certain, perhaps non-essential, particulars. He lays but little stress upon the influence of the glands as bearing upon the general infection, excepting as they tend to retard the progress of the diseased cells coming from the point of inoculation. We believe that he has underrated their importance. It is well known that the lymph spaces and the primary lymphatic vessels are always very poor in cells, but the number is increased as the current traverses the glands. Most of the cells from the initial lesion doubtless undergo fatty degeneration before they are taken up by the absorbents. The comparatively few cells from the periphery which would be washed off into the lymph, while sufficient to convey infection to the nearest lymphatic gland, could probably have but little effect upon the general circulation; not more than do the cells which must, we believe, be taken up directly into the capillaries.

We are not inclined to attach so much importance to coagulation in the lymph spaces as the author does, and we fail to perceive any grounds for supposing that the first period of incubation corresponds to the time occupied in the advance of the disease to the nearest open lymphatic vessel. The infectious process might naturally proceed slowly and imperceptibly at first, more rapidly and with visible effects as the disease progressed, and as the tissues gradually succumbed to the morbid influence.

Regarded as a whole, it can not be denied that the so-called "lymphatic theory" of syphilitic infection presents features of very marked attractiveness. It must not be supposed, however, that we regard it as yet by any means securely established. Microscopical researches in connection with the primary lesion indicate a participation on the part of the blood-vessels in the morbid process equal to if not greater than that of the lymphatics. Auspitz and Unna found the lymphatic vessels patulous and their walls but little affected, while the blood-vessels were always markedly implicated. Even the thickened cord on the dorsum of the penis was found to be due to infiltrations in the adventitia of the blood-vessels rather than to any change in the lymph vessels. It has never been shown that all the lymphatic glands between the initial lesion and the receptaculum chyli are affected before general infection takes place. Indeed, this has been specifically denied. Again, the fact (noticed by Bäumler), that, wherever on the body the point of inoculation be situated, the period of incubation is the same, may be of some significance in this connection. As already indicated, some of the disease germs or infected cells probably find their way directly into the blood-vessels from the initial lesion, and others may be taken up by diapedesis into vessels in the infected glands,* and finally, others, perhaps the major part, enter the circulation through the receptaculum chyli. When any or all of these sources of infection have supplied the diseased cells to the blood in such excess as to infect its entire mass, we have constitutional syphilis.

The explanation of the roseola offered by Dr. Otis is ingenious, and in some respects appears plausible. Wilson's theory of the sympathetic origin of simple erythemas and roseolas is applied by Otis to the roseola syphilitica. This view does not entirely comport with the fact, often observed, that the efflorescence of roseola frequently becomes a papule at a later period, with characteristic cell infiltrations about the cutaneous blood-vessels. Two different pathological processes may be associated here, however; nor is the supposition precluded that all syphilides may be more or less dependent upon vaso-motor disturbance. No such supposition as this, however, is entertained in the book before us. The only explanation given of the papular and other syphilides is the mechanical or anatomical one which we have already alluded to. It is very probable that the form of the vascular arrangement in the papillæ of the skin is a predisposing element in the development of all inflammatory eruptions, but it appears to us decidedly improbable that it alone is capable of determining an inflammatory exudation, such as takes place in the cutaneous lesions of secondary syphilis. It leaves unaccounted for entirely the peculiar arrangement which these lesions assume—the linear, annular, crescentic, and other characteristic forms of the disease, which clearly imply some nervous or vascular controlling force. We believe that the writer has exaggerated the influence of a single physiological factor, and ignored others which have equal or greater claims to our attention.

In all inflammatory processes it may be said that the walls of the blood-vessels take an active part. They include a delicate nervous apparatus, which in health takes cognizance of all the nutritive wants of the part and controls the supply of blood accordingly; while in disease the abnormal supply depends upon its perverted or inhibited action, and the origin of this disturbance may be either central or peripheral. If the growths of tertiary syphilis are of an inflammatory and hyperplastic nature, as nearly all syphilographers agree, we must infer something more than a passive participation on the part of the blood-vessels. Now, our author says, with regard to the lesion of tertiary syphilis, that it "is not due to a hyperplasia, such as we recognize in the papular syphilide and in all the new formations of the active stage of syphilis, but . . . . is due chiefly to *a deposit*, not of *morbid*, but of *arrested normal material*." It may not inappropriately be compared to the accumulation in an over-distended bladder; an obstructed urethra causes the one; an obstructed lymphatic vessel the other. The basis for this theory is found in certain expressions in the American edition of Rindfleisch's "Pathological Histology." This writer speaks of the lymphatics as performing the office of "drains" for the surplus nutritive material supplied to the tissues; and says that "luxurious [*sic*] new formations, catarrhs, and surface secretions of all kinds must be produced where the lymph conveyance is hindered." It may be noted in passing that these statements are not repeated in the last German edition of Rindfleisch, and it may be doubted whether that author still entertains the same positive opinions regarding the function of the lymphatics. They are certainly not shared by most other physiologists.

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* The well-authenticated cases of inherited syphilis, when the disease has been contracted by the mother in the latter months of pregnancy, would seem to attest the power of the cells—they being the sources of contagion—to traverse interposing membranes.

But, admitting that it is the office of the lymphatics to return surplus nutritive material, it does not follow that it is their office to return *formed material*, such as the lymph cells. It is known, as already observed, that the peripheral vessels of the lymphatic system contain very few cells, and that they appear in considerable numbers only after a gland has been passed. It was long ago shown, by Virchow, that solid ingredients entering into lymph, such as the pigmentary particles found in the lungs, the colored substances used in tattooing, or pus cells from a suppurating cavity, did not pass through the lymphatic glands, unless in very small quantity, but were found retained in the substance of the glands. There is every reason to suppose, then, that it is no part of the office of the absorbents to remove cellular bodies from the tissues until they have been disintegrated in the process of tissue metamorphosis. It would seem most natural that, if lymph cells are exuded from the blood-vessels in excess of the necessities of growth and repair, they should either return directly into the capillaries or undergo rapid dissolution. While the syphilitic gumma is in its active and growing stage the office of the lymphatics as absorbents can not effectively begin; only when the cells have undergone fatty degeneration, have become disintegrated, are they taken up and removed.

But, should it be said that it is the fluid portions of the lymph which are retained by the lymphatic obstruction, and that thereby an excessive amount of plasma or albuminous material causes a redundant proliferation of the cells of the connective tissue, we reply that this is hyperplasia—the very thing which the writer denies the disease to be. But, granting that hindrance to the lymph flow is capable of causing hyperplastic growths, should we not be apt to find fluid accumulations as well as cellular? Various affections which are known to be associated with (though not necessarily caused by) obstruction to the flow of lymph, such as elephantiasis Arabum, the lymphangiomata, and the macroglossia of Virchow, show dilated lymph spaces filled with fluid contents; and none of them, moreover, present appearances in any wise resembling the dry formations of tertiary syphilis. The scanty gummy material which is found in the syphiloma is evidently a product of the metamorphosis of the cells, due to a mucous degeneration (Rindfleisch), and can not be regarded as retained lymph. According to Birch-Hirschfeld (and Cohnheim makes similar statements), simple obstruction of a lymphatic vessel rarely affects the peripheral lymphatics, owing to the free collateral circulation, unless the thoracic duct be involved, and even then a compensatory dilatation of the branches which empty into it suffices to maintain the flow, and, when no other relief occurs, "*dropsical swelling* of the organs" is the result. Even should the collateral lymphatic circulation fail to convey the obstructed lymph away, it has always a ready means of escape in the veins, between which and the lymphatics a certain vicarious action has been shown to exist. Finally, we would ask, why, if Dr. Otis's theory be correct, do not gummy tumors follow such obstructions as must be caused by the caseous degeneration of scrofulous lymphatic glands, or by the suppurating buboes of venereal origin?

But we have by no means alluded to all the vulnerable points in this theory. These are such facts as the protracted period it takes for the sequelæ of syphilis to develop; the suddenness of their appearance, often; their rapid disappearance under treatment from which no one would expect such a result in strictures of other channels; the infrequency of their recurrence in the same situation—all of which would appear to militate against the author's assumption. We will conclude by referring to a point which assumes a position of no little prominence in the writer's argument.

The only practical evidence which Dr. Otis adduces in support of his original hypothesis is derived from a single case described by Biesiadecki: In connection with gummatous infiltration of the intestines, the lymphatics were found dilated and filled with cells. The mesenteric glands were swollen, and both afferent and efferent vessels were also filled with cells—precisely the condition of things we should expect. Here was a proliferation of cells, naturally involving the lymph spaces, and from the periphery of the mass cells are carried in the lymph current to the nearest lymphatic gland, where they find a natural obstacle and accumulate till the afferent vessels are filled, the endothelium of the lymph spaces and radicles participating probably in the morbid process. Finally the gland shares in the disease and pours its contingent of cells into the efferent vessels. The same thing occurs, according to Virchow, in cancer of the breast. The cancer cells formed in the outskirts of the tumor become detached, enter the lymphatics, and are carried to the nearest axillary gland; here they lodge and communicate the disease to the glandular tissue, whence the infection proceeds still further. In tertiary syphilis the disease remains localized. The dilated lymphatics, with their cellular contents, are simply marks of the extension of the disease. They prove nothing with regard to any other obstruction than such as obtain normally at every lymphatic gland.

Before closing, we would express our sense of obligation to the writer of these most interesting lectures. We believe that such researches as Dr. Otis has made, evidently with no little earnestness and care, never fail to promote a more thorough study. The thoughtful reader of this book, though he may find it difficult to accept some of the author's conclusions, will surely be stimulated to an increased interest in the pathology of syphilis; will be enabled to view the subject in new aspects and find at his command valuable material to assist his study.

Lectures upon Diseases of the Rectum and the Surgery of the Lower Bowel. Delivered at the Bellevue Hospital Medical College. By W. H. Van Buren, M. D., LL. D. (Yalen.), Professor of the Principles and Practice of Surgery in the Bellevue Hospital Medical College, etc. New York: D. Appleton & Co., 1881. Pp. vi–412.

We gladly welcome this second and greatly enlarged edition of Dr. Van Buren's work, which for so long a time has constituted about the only American text-book on this subject, except the one by Bushe, published in 1837, and now comparatively little read, though worthy of a place in every library. The second edition is a much more pretentious volume than the first—that being little more than a pocket manual, while this is a work on the same scale as those of Curling and Allingham. Without spending time to compare the first with the second (there being little comparison between them), we shall proceed at once to notice the work before us.

The book opens with the consideration of Pruritus Ani, the various Diseases of the Skin of this part, the Oxyuris Vermicularis, and the varieties, causes, and pathological anatomy of Hæmorrhoids, with the treatment of the external variety—all of which ground is covered in twenty pages of heavily-leaded large type. It may be inferred that no space is given up to the discussion of doubtful points in anatomy, either normal or pathological, and such is the fact. But the chapter is full of good points in the diagnosis and treatment of each of the affections mentioned, and is practical in the extreme. Incision is recommended in external piles of recent formation only when pus has formed or is forming; and excision of the tags which remain after the acute symptoms have subsided is deprecated.

In the second chapter Internal Hæmorrhoids are considered, and with a nearer approach to completeness. Once more we see the button-holes in the muscular wall, through which the rectal veins pass, as described by Verneuil, called upon to account for congestion and distention of the extreme capillaries below them; and still we fail, with Allingham, to discover why these may not just as well act as true valves and prevent congestion below, by supporting the weight of the blood above. Regarding treatment, the author, like most other good surgeons, refuses yet to abandon the safe and well-tried ligature. Nor can the fascinating prospect of "cure without knife, ligature, or caustic," induce his allegiance to any other method. He generally transfixes the tumor with a double ligature, instead of surrounding the whole with a single cord; otherwise his method does not differ from that known as Allingham's, which is generally followed. Nitric acid is reserved for the capillary hæmorrhoid, without the formation of a distinct tumor. The other methods of cure are merely referred to, except the one of forcible stretching of the sphincters, which rests on sufficiently good authority to entitle it to mention. There are other noticeable omissions in this chapter. For example, the anatomical structure of internal hæmorrhoids in their different varieties is scarcely mentioned, and the reader might be left to conclude that whenever found they were much the same. Very little is said also of the palliative treatment, or rather of the general medicinal treatment of the affection, by which in a large proportion of cases operative treatment may be avoided; and no reference is made to the fact that a hæmorrhoidal flux may in certain rare cases do more good than harm, as, for example, when such a flux serves to relieve portal congestion, or in cases of cardiac and renal disease, where the hæmorrhoidal affection may justly be considered merely as symptomatic.

The third lecture is devoted to Prolapse, and has already been published in this Journal.* It is noticeable that in proportion as the gravity of the affection considered increases, so does the thoroughness with which it is studied. Here we find the different varieties of prolapse clearly and carefully distinguished from each other: the partial, consisting of mucous membrane alone; and the complete, divided into its three varieties—that in which the bowel begins to slip out by its very lowest portion, that in which the rectum has folded upon itself and become invaginated, and that in which invagination has taken place higher up, as when the vermiform appendix is protruded at the anus. In this part of the work we find page after page of foot-notes, which in themselves are of great value; and, indeed, in many parts of the book these notes are profuse, and show the author's extensive knowledge of the literature of the subject, and many mooted points are discussed in them which might, we think, with advantage have been inserted in the text. Particularly is this the case in the chapters on Ulceration and Stricture. The author's treatment of the cases curable by local means, as is well known, consists in linear cauterizations of the anus, to the exclusion of all the cutting operations designed with a view of producing cicatricial contraction. In the treatment of the more severe cases of intussusception he offers nothing new, and favors early laparotomy. We know not where the line should be drawn between the diseases of the rectum and the department of the gynæcologist, but, if intestinal invaginations which may be felt per anum belong to rectal surgery, a few words with regard to vaginal proctocele would not seem to be out of place in a book of this kind.

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* September and October, 1880.

Lecture IV is devoted to Polypus and Benign Tumors, and the author at once admits that the distinction between benign polypus and epithelial cancer is rather a clinical than a microscopical one, both being included under the general head of adenoid disease, as has recently been strongly impressed upon the profession by Cripps. The main points in the diagnosis and treatment are clearly stated. The few pages devoted to benign tumors are chiefly taken up with remarks on warts and condylomata, a branch of rectal surgery on which more remains to be written than has ever yet appeared, and one offering an attractive field for study. The lipomata, cysts, and enchondromata are disposed of in a few words.

Lecture V is devoted to Abscess, and the succeeding one to Fistula, and we pass at once to the consideration of the author's treatment of abscess of the ischio-rectal fossa. This consists in free and early incision; ample provision for drainage with horse-hair or drainage tubes; the use of antiseptic precautions, both at the time of opening and for the subsequent dressings, with continuous irrigation in cases of gangrenous abscesses; the thorough evacuation of the large bowel before operation, and entire rest as to defecation for some days after; and general dietetic and hygienic measures. Further on he says, when a patient is seen early, and these means are used with intelligence and strict attention to detail, especially in regard to antiseptic dressings, the formation of a fistula should be prevented, in a fairly healthy subject, in nine cases out of ten. This is new ground, and we should have been glad to have more definite reports of cases actually so treated, for, with all these means, except the antiseptics, fistula is the rule, and the avoidance of it the rare exception.

There is a very valuable reference to the abscesses which occasionally form above the ischio-rectal fossa, in the pelvi-rectal space, and which sometimes result in incurable fistulæ—a subject which, so far as our knowledge goes, is not treated of in any of the standard works on diseases of the rectum.

Under the head of Fistula we find the statement that, in cases where a tract runs along the gut above the point of internal opening—in other words, where there is a diverticulum running upward and ending in a cul-de-sac above, though communicating with a complete fistula below—it is good practice to divide the fistula below and leave the tract above. We are surprised to find this statement, and we believe that such an operation will more often result in failure than in cure, for, according to our experience, such tracts do not tend to get well after the fistula is divided, and should always be laid open.

The directions as to the treatment of the more serious cases of this disease are very clear, and the more valuable because they are lacking in all other similar works. In speaking of the employment of the elastic ligature, the author says, to apply it effectively, some practice is required, and the use of instruments made especially for the purpose of passing the cord (such as Allingham's and Helmuth's modification). We remember the remark of a well-known surgeon, that plugging the posterior nares was a very simple operation if only one did *not* use Belloc's sound. So is passing the elastic ligature if an ordinary eyed probe is used instead of Allingham's instrument. The author says this mode of operating has its advantages: it can be applied without pain; the patient can walk about without interfering with the process of cure; there is no bleeding; it is applicable in phthisis, as a compromise for the knife; and, finally, it may be used in deep, bad fistulæ, as an auxiliary to the knife. The last is its main advantage. Viewed from all the other standpoints, there is nothing quite so good to cut with as a knife.

In Lecture VII, Fissure, or Irritable Ulcer, is dealt with, an affection which Dr. Van Buren is inclined to consider as *sui generis*—a malady with characteristics so distinct and peculiar as to individualize it and give it a physiognomy which, with a fair degree of care, will insure its recognition. Nevertheless he admits that many cracks and fissures in this locality get well promptly without their existence having been suspected; and others again last a longer or shorter time, and cause no trouble. He also quotes Esmarch's statement, that the ulcer in rare cases is situated above the internal sphincter.

Lecture VIII, on Ulcer of the Rectum, is perhaps the best chapter of the work and the most valuable one for reference, requiring, as it has, a wide range of reading and personal experience on the part of the writer. We note only a few points. The subject of *esthiomène* is covered in three lines, and yet we believe it is one which has yet to be entirely rewritten, and one which soon will be rewritten by a gentleman well versed in dermatology and syphilis, to which specialty it may properly be said to belong. Both the syphilitic and the chancroidal origin of the so-called syphilitic stricture and ulceration are taught, and here again the most valuable material is to be found in the foot-notes and not in the text. Well-marked secondary ulceration the author has never seen, but its existence is believed to be probable from analogy. Tertiary ulceration is given on the authority of Vidal. The symptoms, diagnosis, and treatment are given in full.

Lecture IX, on Benign Stricture, is made to include narrowing by pressure from without as well as from organic changes in the wall of the rectum itself. The causes of benign stricture are the ulcerations previously described, congenital atresia, direct traumatism, hypertrophy of the wall of the bowel, the syphiloma of Fournier, and the various causes of pressure from without. A special chapter (X) is devoted to the treatment of this condition, and the ground is well covered, without containing anything particularly new. We see that the author prefers inguinal to lumbar colotomy, speaks of rectotomy as still on trial as a substitute for colotomy, and does not approve of excision in cases where the diagnosis of the benignity of the process is assured.

Lecture XI is devoted to Cancer. The author unhesitatingly adopts the results of the work done by Cripps and Stimson with the microscope, and several cuts from these two authors are inserted, showing the adenoid nature of the tumors. The points in the differential diagnosis between benign and malignant stricture are stated with great clearness, and the different methods of treatment, including excision, are concisely given.

The last lecture is devoted to a brief consideration of Congenital Malformations, Fæcal Impaction, Foreign Bodies, Atony, the means of Diagnosis and Examination in rectal disease, Neuralgia, and the Hygiene of the Lower Bowel.

We have thus briefly tried to give the reader an idea of the scope of this work: and the work is a good one—as good as either Allingham's or Curling's, with which it will inevitably be compared. Indeed, we should have been greatly surprised if any work from the pen of Dr. Van Buren had not been a good one; and we have to thank him that for the first time we have an American text-book on this subject which equals those that have so long been the standards. If any criticism is to be made, it is not upon what the work is, but rather upon what it fails to be. We recognize fully an author's right to leave unsaid as much as may please him, and to mark out for himself the scope and character of his book. The scope of this one is about what would be considered appropriate in an ordinary course of lectures to medical students on diseases of the rectum—and this is exactly what the book purports to be. If we had hoped for something more exhaustive, a more profound and laborious handling of the many vexed questions which still await a settlement in this branch of surgery, we have only to make the best of our disappointment, and no blame attaches to the author. He has thoroughly done what he proposed to himself to do. We can only regret that it has not occurred to him to do what no man in this country could do as well—write a complete treatise on the pathology, diagnosis, and treatment of the diseases of the lower bowel.

The Principles and Methods of Therapeutics. By Adolphe Gubler, M. D., Professor of Therapeutics in the Faculty of Medicine, Paris, etc. Translated from the French. Philadelphia: D. G. Brinton, 1881. Pp. 445.

Those who are at all familiar with the literary work of Professor Gubler were prepared for an excellent treatise from him on the subject of Therapeutics. For thirty years he has been investigating and experimenting, and has from time to time given to the profession the results of his investigations and experiments. A pupil of Trousseau, he has been an able clinical teacher besides being a distinguished botanist and chemist. He has thus established a right to be heard on the subject of which his book treats. Somewhat inclined to theorize, he yet has apparently established his theories by practical observations. He reminds one of Trousseau in his almost universal erudition. His book gives evidence of profound knowledge of botany, chemistry, physiology, anatomy, pathology, and even metaphysics and philosophy—all of them, however, being brought to bear on the great subject of the book, Therapeutics. Gubler's contributions to the medical journals during the past twenty years have stamped him as a careful and trustworthy investigator. Be it remembered, it was through his efforts and recommendations that aconitia, bromide of potassium, Calabar bean, chloral, eucalyptus, bromhydrate of quinine, and jaborandi were brought into common use.

The book is unusual in its plan. The principles of therapeutics are not taken up as accessory to materia medica, nor is much said on the treatment of individual diseases, but the book is devoted to the *methods* which can be most effectively employed in the administration of remedial agents and the *processes* by which their remedial action is exerted on the human economy.

The first four chapters are devoted to general therapeutics, definitions, etc. The author is a firm believer in "moral remedies," as he calls them, such as love, music, reading, travels, pleasant companionship, etc. An attempt is made to make a classification which is therapeutical, but it is based upon physiological effects; and this, it seems to the reviewer, is the only rational method of classification, and even this is open to many objections.

The next three chapters are devoted to a consideration of the avenues for the introduction of medicaments. Naturally, the digestive tract is the first to be considered. Under this head the author makes some very sensible observations, and gives definite directions as to the time of administration of remedies, and explains the chemical and physiological reasons why, in some persons, at some times remedies act well and at other times just the opposite. Strange to say, Gubler does not in the least degree believe in idiosyncrasy.

He says, in regard to the absorbent power of the stomach, that there exist illusions: "indeed, it is not an absorbing organ, absorption only taking place in it in a slow and difficult manner." Among the experiments given to show the inferiority of the stomach as an absorbing organ, he refers to the one by Claude Bernard, which consists of the introduction into the stomach, after ligature of the pylorus, of a more or less dilute solution of strychnine. So long as the pyloric orifice remains closed there is no tetanus, nor are convulsions produced; but, if the ligature is slackened, in a few minutes the phenomena of tetanus are induced. The author then deduces a rule, viz.: "Organic substances must be administered while fasting, especially when they are easily alterable." The patient should even avoid smelling savory dishes, as it calls forth the gastric juice and interferes with the absorption of the remedy. With what satisfaction the homœopathists will read this sentence! Notwithstanding all the disadvantages pointed out by the author, he still admits that the stomach is the best avenue, because it is the easiest, most convenient, and most natural. He recommends the giving of iron just before a meal, likewise arsenical preparations. In the next sentence he says remedies which exert an injurious influence on the labor of digestion should not be given before a meal. Stomach digestion in France must be different from what it is in America, for certainly in many cases iron, if given before a meal and continued for a length of time, will derange digestion, and still more certainly will arsenic do it.

The rectum, as a means of introduction of remedies, is considered for some purposes superior to the stomach. Some statements are made which will create, to say the least, some doubt. For example, it is stated that a solution of opium, or of extract of belladonna, or strychnine, will be more readily absorbed through the rectum than by the stomach—certainly an interesting and practical fact if it be true. If accepted, there is no necessity for giving a larger dose of these substances by the rectum in order to get the same effect. It is a well-established fact now that sometimes a small dose of chloral by the rectum will produce a much more decided effect as an hypnotic than a much larger dose by the mouth. "The bladder in a healthy state does not absorb, but an ulcerated bladder becomes a very active medium for absorption"—a very plain and simple explanation of the present controversy in reference to the absorption or non-absorption by the mucous membrane of the bladder. The same explanation will apply to the mucous membrane of the vagina. The mucous membrane of the neck and body of the uterus absorbs very readily.

On page 110 the author remarks, "Asthma does not yield to oxygen; asthmatics are only well in a second-hand atmosphere. Hence there are no asthmatics in Paris." There ought, then, to be no asthmatics in New York City just now. It would seem that Gubler has had poor success in the treatment of asthma by inhalations of oxygen, just as we have had in this country. He concludes that the use of oxygen in almost all diseases in which it would seem to be indicated is questionable, to say the least. He makes some interesting remarks on ozone. He is convinced that it is dangerous, and that it can be rendered useful only when it exists in the air in very weak proportions.

In the chapter devoted to treatment by cutaneous methods, he refers to the great difference in the absorbent power of sound skin and skin which is abraded or ulcerated. Mercurials applied to the healthy skin require to be put on in considerable quantity to produce salivation, but, if put on an abraded or ulcerated surface, a small quantity will produce salivation, and do it quickly. This fact should be borne in mind in administering medicated baths in skin diseases. Remedies are absorbed very readily from sinuses or the inner surface of abscesses. Carbolic-acid solutions, when used to wash out such cavities, should be very weak, and none of the solution should be allowed to remain.

He scouts the idea that laudanum, poured on a poultice and the poultice then applied to the healthy skin, can produce any local or constitutional effect other than the poultice alone would have effected; and the poultice itself produces its effects, not by any penetration, but by John Hunter's "sympathy of continuity and contiguity." But "continuity and contiguity" will not always explain the action of external applications. The reviewer, while an *interne* in Bellevue Hospital, making his rounds one morning, found a patient with simple bronchitis who had the usual substernal pain. He directed his junior assistant to order a mustard plaster and put it on over the sternum. The assistant ordered the plaster, but forgot to return and apply it. The next morning, on making the rounds, the patient was found much better and the pain gone. She was asked to open her dress, to show if any redness still remained from the plaster. She hesitated and said she had put the plaster on herself. It was found she had indeed put it on. She had made her own interpretation of "sternum" and applied the plaster directly over the sacrum. It had done its work —not, however, by "continuity and contiguity."

Considerable space is devoted to a discussion of the hypodermic method. It is a very careful *résumé* of the subject, and one well worth reading. The author makes the statement that bromhydrate of quinine is very soluble in water and rarely produces irritation, and that the cerebral symptoms of quinine are never produced. The preparations of bromhydrate of quinine used in this country are not very soluble in water; they *do* produce irritation, and produce ringing in the ears, in much smaller doses than other preparations of quinine. The author thinks that the nearer the hypodermic injections are made to the seat of pain the more rapid and certain they are in their effect. He also thinks the more central the injection is made the better absorption takes place, and that as we approach the periphery there is a reduction in the absorbing power. He makes a practical suggestion which all physicians would do well to follow, and that is, always to wash the syringe out with water or some disinfecting solution after using it. How easy it would be to convey syphilis by carelessness! How equally easy, under some circumstances, it might be to convey other blood poison! No reference is made to deep injections of chloroform in the treatment of sciatica. The whole subject of hypodermic injection is most admirably treated.

It is an interesting fact that transfusion was first done, so far as known, in 1492. It was done by a Jewish physician upon Pope Innocent VIII. The blood was taken from three boys, all of whom died, as probably too much was taken. It did not save the Pope's life. Nothing specially new is offered on the subject. Gubler recommends it as possibly a useful method, and considers it still *sub judice.* No reference is made to the experiments made in this city, which might have made the discussion more complete.

On page 259 the assertion is made that urine normally alkaline may be rendered acid by administering mineral acids in large doses—certainly a new fact, if a fact, as it is usually supposed that urine normally alkaline can not, by giving any amount of acid, be rendered acid.

Fifty-six pages are devoted to the subject of arsenic. The author attempts to show the modifications which medicaments suffer in the organism, and what temporary distributions they undergo, and he selects arsenic to illustrate these points. Much space is given to the medico-legal aspect. Gubler has evidently given much time and study to arsenic, as reference is constantly made to his own experiments. One property of arsenic will be new to most readers—its power as an antiseptic. According to the author, it is a decided cardiac sedative, even when there is no fever; and for that matter it is a respiratory sedative. He is a believer in the eliminative power of iodide of potassium, not only in lead poisoning, but also in arsenical poisoning. He says: After all traces of arsenic have disappeared from the urine, if iodide of potassium be given for two or three days, arsenic will be found in the urine. His explanation is, that the arsenic is retained in the glandular system, and the iodide of potassium, increasing the activity of the glands, causes it to be eliminated. A case is related which from a medico-legal standpoint is interesting. A woman had taken arsenic. For some reason it was found necessary to shave all the hair from her head. Eight months afterward, when the hair had grown out, some of it was examined, and a considerable quantity of arsenic was found in it. When it is remembered that the hair remains quite perfect for centuries, this becomes all the more interesting.

Professor Gubler might be considered a decided enthusiast in his work, for, under the head of Elimination of Medicaments, he states that he has eaten the false mushrooms, which are known to be very poisonous, for the purpose of studying their effects. He says they produced very disagreeable gastro-intestinal symptoms and an intoxication somewhat like that produced by alcohol. He believes alcohol taken into the system in small quantities may be burned and disappear, but, if taken in large quantities, it passes in great part unaltered. The chapters on elimination are very suggestive and well worthy of study.

Two chapters are devoted to the accumulation of remedial agents and the prevention of the same.

Force of habit is recognized as an important point to be thought of in the continued use of remedies, particularly in chronic diseases.

On the subject of the antagonism of remedies, he declares himself a non-believer in the antagonism of atropine and morphine. What would he say to the example of recovery in Fothergill's case of opium poisoning, in which one grain of atropine was injected hypodermically? He relates the case of a man who swallowed by mistake three centigrammes [half a grain] of sulphate of atropine, and expresses surprise at his recovery with no treatment. It was the largest dose he had ever known taken and the person recover. He says there is no efficient antidote to opium, although sulphate of quinine comes the nearest to it.

He finishes his book by the assertion that idiosyncrasy in the effects of medicines can not be admitted. Although he can not explain the special effects, yet he believes the science of the future will explain all these exceptional phenomena.

We close the book with the feeling that it would be profitable to read it again at once. It is full of good things, and very suggestive. It should be studied, not simply read. It is poorly translated. It is often necessary to read a sentence several times in order to get the author's exact meaning, and his reasonings are not always easy to follow; but all labor expended on it will be amply repaid.

The mechanical part of the book is excellent. The paper is good, the type clear, and the binding very firm.

The Principles and Practice of Surgery, being a Treatise on Surgical Diseases and Injuries. By D. Hayes Agnew, M. D., LL. D., Professor of Surgery in the Medical Department of the University of Pennsylvania. Profusely illustrated. Vol. II. Philadelphia: J. B. Lippincott & Co., 1881. Pp. 1066. [Price, $7·50.]

From the fact that this second volume of Dr. Agnew's work is to be followed by yet another, the magnitude of the author's task may be comprehended. He has undertaken to write a complete system of surgery, and, so far as the subjects included in this volume are an index of the whole work, he has succeeded wonderfully well. We will take them in their order.

Chapter XI, the first of this volume, deals with Dislocations, which are divided into complete and incomplete, and also into traumatic, pathological, and congenital; and we observe a page devoted to the pathological effects of a dislocation, both immediate and remote, with a good illustration of a new socket on the dorsum ilii. The general rules for the treatment of compound and complicated dislocations are concisely stated, as are those for the treatment of old luxations, and a few pages are devoted to the general appliances for reduction—the noose-knot, the clove-hitch, the Indian basket, the rope windlass, and the pulleys. Each of the special dislocations is then dealt with in full. Under the vertebræ, a table of twenty-four cases of dislocations of the cervical vertebræ is given, with the results—nine recoveries, thirteen deaths, and two unknown. Special paragraphs are devoted to the luxations of each of the upper cervical vertebræ, and general rules are enunciated for their treatment. The rarer dislocations of the clavicle and scapula are fully described, as are those of the shoulder, with the various methods of reduction and treatment. Each is fully illustrated—the reduction with the heel in the axilla, La Mothe's method, Smith's method, that by fixing the scapula with the foot, that by reduction over the knee, that by extension and counter-extension, and the purely manipulative methods. At the cut which is marked "reduction by manipulation as practiced by the author," we pause for an instant to admire both the representation of the method and that of its author. Under the luxations of the hip-joint an interesting table of anomalous cases is given, twenty-three in number, with their results. In this way each and every dislocation is completely described, and nearly every one is illustrated, and the one hundred and twenty-six pages devoted to this part of the work constitute a very complete chapter on this subject.

Chapter XII is devoted to Diseases of the Joints, and deals with movable bodies, traumatic articular disease, irritable joints, wounds of the joints, acute and chronic synovitis, true and false anchylosis and their treatment, with a description of Adams's operation, fibroid degeneration, and the different varieties of arthritis. Many pages are devoted to the consideration of hip-joint disease, which is considered under the general heading of strumous arthritis, and several microscopic drawings are given representing the different pathological processes. Ample justice is done to the many mechanical appliances for its treatment, and full directions are given for the application of each. After this, each of the other joints is considered in its turn, special attention being paid to disease of the upper cervical vertebræ. A short paragraph is also devoted to hysterical joint affections, and the main points in the differential diagnosis are clearly brought out.

Chapter XIII is devoted to Excisions, both of joints and of bones in their continuity. The general conditions requiring and contraindicating excisions are concisely stated, as is also the method of repair after the operation, and the instruments required are illustrated. Each joint is then dealt with in turn. A table of thirty-four complete excisions of the clavicle, with the results, is given, and the literature of excision of the scapula is also given in full.

Chapter XIV is devoted to the consideration of subjects connected with Minor Surgery. It should have been omitted altogether, as might easily have been done without injury to a book of this character, or have been made more complete. As it is, it includes merely the different ways of holding the knife, of making incisions, and of performing venesection.

Chapter XV deals with the general considerations regarding Operations, and the accidents which may attend them—hæmorrhage, entrance of air into a vein, embolism, mania a potu, hysteroidal delirium, and tetanus.

Chapter XVI, on Anæsthetics, includes all that is necessary on this subject. The precautions in their use are stated, and the methods of administering each of the more important ones are given in their turn. Ethidene is highly spoken of. The danger of syncope is mentioned as an objection against bichloride of methylene. Rhigolene is particularly recommended for local anæsthesia.

In Chapter XVII the whole question of Amputation is considered. There are several valuable tables in this part of the work, including one of simultaneous multiple primary amputations, and another of spontaneous amputations in utero. There are also several mortality tables, one of cases of avulsion of the arm, scapula, and part of the clavicle (fourteen of them, all ending in recovery), and one of amputations of the arm with the whole of the scapula and with or without a part of the clavicle. The same completeness shown in every other part of the book is again manifest in the descriptions and illustrations of each of the special amputations, and, that nothing may be omitted, the question of artificial limbs and their internal mechanism is included.

Chapter XVIII deals with Shock and Traumatic Fever. The part devoted to the latter question is rather clinical and practical than theoretical, though the chief theories are concisely stated and left mostly to the choice of the reader.

Erysipelas is considered in the next chapter, with furuncle and phlegmon, and with burns from artificial and solar heat, frost-bite, and lightning stroke.

Chapter XX is a complete work, of about three hundred large pages, on Injuries and Diseases of the Genito-urinary Organs, and Chapter XXI is another complete work on the Surgical Diseases of Women. The first contains all that is generally found in such works, and occasionally something more. Pages are devoted to fracture and luxation; to calcification and priapism; to wounds, both voluntary and involuntary; to urethral fever; to the treatment of urethral fistulæ; to undescended testicle; hæmatocele; irritable testicle and urethra; neuralgia; hypertrophy and atrophy; impotence and sterility; and the congenital malformations. After the urinary deposits and the treatment of calculus, the author deals with diseases of the ureters and kidneys—hydronephrosis, renal calculus, and pyelitis. A table of twenty-nine cases of nephrotomy is appended.

The chapter on the surgical diseases of women includes those of the vulva, the perinæum, the vagina, the uterus, the ovaries, and the urethra; and a table of one hundred and seven cases of oöphorectomy is included. There are separate studies of extra-uterine pregnancy, rupture of the uterus, Cæsarean section, and hydrocele of the round ligament, and an analysis of 5,153 cases of ovariotomy.

Chapter XXII is devoted to surgical affections of the soft parts over the Spine, and diseases of the vertebræ, the spinal marrow, and its membranes, as well as to malformations of the head from effusion.

Chapter XXIII covers all that can be said about the Mouth, lips, tongue, and teeth; with a table of dentigerous cysts, and tumors of the upper and lower jaw, the treatment of malformations, affections of the fauces, the neighboring glands, the pharynx, and the œsophagus. Another valuable table (all the tables are exceedingly valuable) of thirty-six operations for external œsophagotomy is added, and the text closes with the stomach-pump and its uses. Finally, to all is added an exhaustive index of thirty pages of fine print.

We have tried in this way to give an idea of the scope of this volume of the author's immense work. Looked at merely from the standpoint of the time it must have required to produce it, it is wonderful—and yet it is never verbose, but always concise; never rambling, but always practical. It is, in fact, about a thousand closely printed pages of practical surgical matter; and, being only one volume of three, it shows the magnitude of the task an author undertakes when he attempts to write the surgery of the present day. How has Dr. Agnew succeeded in the task? Admirably. The matter is good—all good, and the complete work will be not only a monument of personal patience and literary effort, but, perhaps, all things considered, the best standard text-book on surgery in the English language.

A Manual for the Practice of Surgery. By THOMAS BRYANT, F. R. C. S., Surgeon to, and Lecturer on Surgery at, Guy's Hospital, etc. Third American, from the third revised and enlarged English edition. Edited and enlarged for the use of the American student and practitioner, by JOHN B. ROBERTS, A. M., M. D., etc. With 735 Illustrations. Philadelphia: Henry C. Lea's Son & Co., 1881. Pp. xx–17 to 1005, inclusive.

THE third American edition of this standard work is in one volume, while the English is in two, and, although the publishers have in this way conformed to the popular demand, the lines are too long (five inches) for the eye to follow the words easily. Otherwise the book, in its cover of half Russia, is a handsome one for the library. Of its value little need be said. The author has spared no pains to keep it up to date, additions have been made here and there throughout the text, and many new illustrations have been inserted, so that it retains its place among the best of the text-books. It has always been a book which derived its chief value from the authority of its statements—the authority of a surgeon of large experience and much talent. In it many minor matters have been passed over in silence, but the more important ones have been ably handled, and doubtful points have been stamped with the dictum of the author. For this very reason it has always been a satisfactory book to turn to, in time of doubt, for the guidance of the experience and judgment of one man, and he one who had the right to speak, and spoke in no doubtful language. In short, the work has grown familiar to us as the practice of surgery of Mr. Bryant, and we have always supposed that Mr. Bryant knew very nearly what kind of book he wished to write—what he wished to say and what to leave unsaid. In the opinion of somebody, however, Mr. Bryant needed an assistant on this side of the water to help him bring his work up to date. What the author has refrained from saying has now been said for him by another, and the mistake of trying to write the whole of surgery in one book, which he carefully avoided, has been committed by another under his name. After all, he has fared pretty well, for what he has written has been allowed to stand, only it has been supplemented on almost every page. Still, by watching the brackets, we can tell what is the author's and what is the editor's, and for this we are grateful.

Bryant's surgery is known. Roberts's surgery, within the same cover, is open to review and criticism, being a first edition. Much of it is good matter, showing reading and knowledge of the work of others rather than experience or originality. Were Mr. Bryant dead, it might be well enough for somebody to edit a new edition of his work, with notes and additions; but for the present such a task seems, to say the least, unnecessary.

A Manual of Diseases of the Throat and Nose. By Francke Huntington Bosworth, A. M., M. D., Lecturer on Diseases of the Throat in the Bellevue Hospital Medical College, etc. New York: William Wood & Co., 1881. Pp. xx–427.

The importance which laryngology has assumed during the past two decades will be apparent when we call to mind that within the last four years there have appeared, in the English language alone, four systematic treatises upon this subject (Lennox Browne, J. Solis Cohen, Morell Mackenzie, and the translation from von Ziemssen). While all of these works offer striking contrasts with one another, each is in its own way possessed of especial value, so that the series would seem, at least for some years to come, to exhaust the subject. The task undertaken by the author of this latest work is therefore most ambitious. It is a pleasure to record that in the performance of it a decided success has been achieved.

The intention of the book, as explained in the preface, has been to present a candid record of the results of nearly ten years' personal experience in the treatment of diseases of the throat. The methods recommended are all such as have proved most valuable in the hands of the author, while those advised by others have, as a rule, been passed over unless of special value.

In the classification of disease, "that plan has been followed which is based upon the general laws which govern the manifestation and development of morbid processes in all mucous membranes, and which at the same time harmonizes most completely with clinical observation." In undertaking this work it was not the author's design "to prepare a *complete treatise* on the throat, but rather to describe those affections met with in ordinary practice." Diphtheria and the throat manifestations of the exanthemata have therefore been omitted as belonging more properly to general medicine.

The work is divided into four sections, as follows: I. Introductory, including chapters upon the "Use of the Laryngoscope"; "The Anatomy, Physiology, and Pathology of Mucous Membranes"; "Methods of treating Mucous Membranes and the Use of Instruments," and "Taking Cold." II. Diseases of the Fauces. III. Diseases of the Nasal Cavity. IV. Diseases of the Larynx.

An excellent description of the normal anatomy of the parts precedes each section. Unfortunately, the opening chapter, upon the use of the laryngoscope, contains much that is fairly open to criticism. The most important part of this subject is illustrated by two woodcuts, Figs. 8 and 10, which represent the laryngoscopic examination of a patient. These cuts, when compared with each other and with the text, can hardly fail to fill the mind of the student with perplexity, for in Fig. 8 the examiner is seated with the illuminator upon his *right* side and the head mirror over his *right* eye; in Fig. 10 the illuminator is upon the examiner's *right* side, while the head mirror is over the *left* eye; while in the explanation given in the text the student is directed to place the illuminator upon his *left* side, and the head mirror over his *right* eye. The position of the patient, as represented in Fig. 10, with the back arched and the head held carelessly forward, is contrary to all rule, and is such that in many cases a successful demonstration of the larynx would be impossible. The use of the vowel sound "ah" instead of "e," as recommended by the author in order to bring the larynx into view, is also not in accordance with established usage. After a description of the methods of examining the pharynx, there is given a most excellent section upon the examination of the nasal cavity. For this it is urged that sunlight be used whenever possible. The method of tying the palate suggested by Surgeon-General Wales is strongly recommended in cases in which a wider patency of the palato-pharyngeal space is required. In Chapter II, the methods of treating mucous membranes and the use of instruments belonging to this department are well described, although the assertion that "the sponge is unquestionably preferable to either the brush or cotton" will excite surprise.

Part I closes with an interesting chapter upon "Taking Cold."

Part II, under the somewhat indefinite title of "Diseases of the Fauces," is made to include catarrhal, croupous, or exudative, and acute affections of the tonsils, hypertrophy of the tonsils, systemic diseases of the pharynx, and neuroses of the pharynx. As to the effects of the use of tobacco in chronic catarrhal pharyngitis, the author remarks that "tobacco smoke is without question an irritant to the mucous membranes of the air passages. . . . On the other hand, it is also true that the mucous linings easily become inured to the action of the smoke, so that breathing or inhaling an atmosphere charged moderately with it is tolerated with impunity." The evil effects of excessive smoking, which effects are unquestioned, are due not to its directly irritative influence, but indirectly to the systemic condition which it produces. In treating chronic pharyngitis, the use of Dobell's solution, followed by applications of some astringent, preferably a weak solution of nitrate of silver (twenty grains to the ounce), is recommended. Enlarged blood-vessels upon the surface of the mucous membrane should be destroyed by the actual cautery. The remaining features of the treatment have reference to whatever complication may exist, such as nasal or pharyngeal catarrh, dyspepsia, etc.

The author's observation as to the relation of cause and effect between the inhalation of dust and pharyngitis sicca is by no means new. The stimulating properties of galanga and sanguinaria render these drugs, he believes, especially valuable in the treatment of dry catarrh. They should be used topically in the form of powder. For acute follicular pharyngitis the author advises the administration of iron and the local application of a forty-grain solution of nitrate of silver; for chronic follicular pharyngitis: first, cleansing of the parts, secondly, the application of a four-grain solution of nitrate of silver or other astringent, and thirdly, destruction of the enlarged follicles by means of the actual cautery. Internally, cubebs and chloride of ammonium are very efficacious.

In Chapter VII, upon Acute Affections of the Tonsils, the author suggests the value of blood-letting, either general or local, at the outset of the attack. In persons liable to attacks of sub-acute amygdalitis the author considers justifiable the procedure proposed by Llewelyn Thomas, of London, namely, excision of the tonsil during the attack, and while the organ is so enlarged by inflammatory processes that it may readily be seized and thoroughly removed.

In Chapter IX, following a discussion of Syphilis of the Pharynx, is given a short but interesting article upon Strumous Ulceration of the Pharynx, in the course of which the author alludes to the doubt which always exists as to the true nature of the disease, and states that, from his having failed in three cases to secure the specific results of anti-syphilitic treatment, he is disposed to regard the affection as non-syphilitic. The division ends with Chapter X, upon Neuroses of the Pharynx, which very properly includes herpes of the pharynx as well as the hystero-neuroses.

In the next division of the book, upon Diseases of the Nasal Cavity, a good *résumé* of the present condition of knowledge upon the various forms of nasal catarrh is given, and the same general principles of treatment which were before laid down for analogous conditions of the pharynx are advocated, namely, thorough cleansing of the parts, followed by suitable astringent or stimulant applications, and the removal of hypertrophic tissue by surgical or chemical means.

Following a consideration of Syphilis of the Nose is a chapter upon Tumors of the Nasal Cavity. In this especial prominence is given to the treatment of mucous polypi of the nose, for the purpose, evidently, of calling attention to the very ingenious little *écraseur* known as "Jarvis's snare," which, for the purposes intended, the author prefers above all other instruments. While the decided utility of this instrument will readily be conceded, there are, we believe, many cases in which a properly constructed polypus forceps will accomplish the end desired with greater facility, equal thoroughness, and no more pain. Following the removal of the polypus, the author advises the application of the galvanic cautery to the stump, although, in a subsequent paragraph, Voltolini's method of removal by the galvanic cautery is condemned, on the ground that it is painful and likely to cause irritation and swelling.

Passing over the chapter upon Catarrhal Affections of the Larynx, we reach that upon Laryngeal Phthisis, which, from the peculiar views it contains, is one of the most important in the whole book. The author believes that this affection is primarily of inflammatory rather than of tubercular origin. Although it is associated in a large majority of cases with chronic lung trouble, he states that he has "seen several cases in which the disease manifested itself in the larynx before it was possible to detect any pulmonary affection." The opinion is advanced that tubercular laryngitis may be either an effect or a cause of pulmonary disease. The majority of cases are the effect of it, by reason of the general constitutional impairment, local irritation, and coexistent catarrh of the larynx common in tuberculosis. On the other hand, primary laryngeal phthisis, if not arrested, leads to the development of pulmonary disease, by reason of the pain, cough, insomnia, dysphagia, and dyspnœa which are prominent symptoms of the laryngeal disease, and which "must necessarily aggravate the previously existing state of impaired health and eventually lead to the development of further disease, which fixes itself upon the organs most closely connected, anatomically and physiologically, with the one primarily affected, viz.: the lungs, the laryngeal disease acting as a direct cause of the lung disease." There are no sufficient reasons for considering anæmia of the larynx to be a stage of the disease. These the author classifies as: 1. The stage of thickening; 2. That of infiltration; 3. That of ulceration. The old theory, that improvement in the condition of the larynx is likely to be attended with aggravation of the lung trouble or *vice versa*, is disputed, and the sanguine view is held that in the earlier stages the disease is curable, probably in a majority of cases. The author has even seen patients recover after extensive ulceration and destruction of tissue. The plan of local treatment advocated is as follows: 1. Thorough cleansing of the parts; 2. Application of mild astringents, alteratives, or resolvents, as may be indicated; 3. The application of an anodyne to relieve pain or irritation; 4. The application of iodoform as a specific in ulcerations of mucous membranes. This plan of treatment, proposed something over a year ago by the author, has already met with universal favor, and commends itself as the most rational as well as the most successful one yet offered. The chapter, so far as it goes, is excellent, but more might have been said with advantage upon the subject of treatment, since local medication plays but a small part in the general management of such cases. The inference is also forced upon the reader, that the distinctions between simple catarrhal ulceration of the larynx and the disease known as tubercular laryngitis have not been drawn with sufficient clearness to avoid the suspicion that the success in treatment claimed may have been due to looseness in diagnosis. Certainly other observers have not been so fortunate as the author in the use of the same means.

Chapters XVIII and XIX, upon Syphilis of the Larynx and Laryngeal Stenosis, are followed, in Chapter XX, by a discussion of Neuroses of the Larynx, which is in all respects excellent. Although written with sufficient clearness to be readily understood by the student, it is still so comprehensive and logical that the more advanced practitioner can not fail to read it with great satisfaction and profit. In the next chapter, the subject of Tumors of the Larynx is concisely but satisfactorily treated of, and the book is brought to a close by chapters upon Artificial Openings into the Air Passages and Extirpation of the Larynx. An appendix is added, which contains formulæ for a large number of preparations useful in the treatment of the cases to which the work is devoted.

Taken as a whole, the book, although possessed of very decided merit, will supplement, rather than supplant, the more complete works which have lately preceded it, for it is characterized by a want of symmetry and an adherence to personal convictions and experience which materially impair its value as a manual. As to the woodcuts with which the book abounds, very few of them seem to be original.

Relapse of Typhoid Fever, especially with Reference to the Temperature. By J. Pearson Irvine, M. D., B. Sc., F. R. C. P. Lond., Assistant Physician to Charing Cross Hospital, etc. With temperature charts. London: J. & A. Churchill, 1880. Pp. 144.

The subject of this volume is one to which but little if any special study has been given previously. The following are the views of the author, and his conclusions from the examination of the records and temperature charts of thirty-one cases of this disease: Relapse of typhoid fever is much more common than is generally supposed. The extent to which typhoid prevails is certainly under-estimated. Many cases must be passed by because of their mildness. Anomalous cases of typhoid fever are frequently mild cases, obscured by pulmonary or other complications. If this be the case in the primary disease, clearly there is additional danger of difficulty in relapses. The value of the temperature as a guide during apparent convalescence can not be over-estimated. The thermometer is the only efficient means of clearing away obscurity in these cases. Relapse has in most instances a marked resemblance to the original attack, and in most cases one or other of the typical signs of typhoid is met with. The stools are typhoid in character, and usually a typical eruption is found if carefully looked for. Relapse is as much a disease of contagion as is the primary fever. Examples are given, with temperature charts, of: 1. Single relapses of simple nature. 2. Relapses either irregular or complicated. 3. Double, triple, and quadruple relapses. 4. Recrudescences, intercurrent relapses, and cases likely to be confounded with relapse. 5. Fatal relapses, simple or complicated. Out of a total of forty-six relapses recorded, in twenty-nine the *apyrexial interval* between the primary attacks of typhoid and the relapse was found to average a fraction over five days. Still there seems to be no certainty in regard to the length of this interval. In four of the twenty-nine intervals observed in hospital, the abeyance of fever was less than twenty-four hours. In almost all the cases of uncomplicated typhoid, the temperature during the "intervals" was normal, and often subnormal. Generally speaking, if a patient suffers one relapse, a second relapse should be looked for and guarded against. Of the thirty-one patients, ten had a first relapse, at least five had a third relapse, and in one case a fourth relapse occurred.

The *duration* of relapses is uncertain. In the twenty-nine instances reported, it averaged from twenty to twenty-one days. Later relapses are shorter than the earlier ones, if no accident occurs. The duration is affected by pneumonia, abortion, or the slow healing of old intestinal ulcers. The relapse is manifested by a sudden and continuous elevation of temperature, increasing daily, with or without remissions, until it reaches its maximum on the fifth evening of the relapse. From the fifth day the temperature maintains nearly the same level until the eighth or ninth day, when it falls decidedly and critically. On the eighth or ninth day the temperature is found from two to six degrees or more below its previous level. From the ninth day a new accession of fever begins. On the tenth day the temperature may run nearly to previous levels, but afterward there are gradual remissions until the close of the disease.

By the use of the thermometer, the accidents of relapse, which are probably more numerous than those of the primary disease, are to be avoided. "*Intercurrent*" relapses, of which three cases are reported, run a more or less typical course, after interrupting the disease midway; the manner of their onset and the rapid rise of temperature up to the fifth day indicating intercurrency rather than complications. The temperatures of "*recrudescence*" are simply accidental, and are due to the disturbance of the local intestinal lesions chiefly by errors in diet. The temperature runs up suddenly, and as suddenly falls.

The *mortality* of relapses is far less than that of the primary attacks; this is due to the fact that accidents and complications are looked for. The clinical point is to discover the complications, and thus explain irregularities of fever which otherwise would be of grave import. Persons are met with suffering from pneumonia or pleurisy secondary to typhoid, and we may go far astray if we fail to recognize the disease on which they are contingent. The fatal cases were three. Their charts show a variation of temperature from that of more favorable cases. In any instance of relapse of typhoid, a temperature on any day after the fifth, which exceeds or even equals the temperature of that day, is a bad sign.

The cases are concisely reported, the author's style is clear, and the work is quite interesting and instructive.

Fever: a Study in Morbid and Normal Physiology. By H. C. Wood, A. M., M. D., Professor of Materia Medica and Therapeutics, etc., in the University of Pennsylvania, etc. Philadelphia: J. B. Lippincott & Co., 1880. 4to, pp. vi–258. [Smithsonian Contributions to Knowledge, 357.]

This work is the result of a great amount of labor, and the author's conclusions have been reached from a very large number of experiments upon animals. It is divided into four chapters. Chapter I treats of The Essential Symptom of Fever. From experiments and arguments it is proved that excessive temperature is the essential symptom of fever, the other phenomena—acceleration of the heart's action and disturbance of the circulation, the nervous disturbance, and the disturbance of nutrition—being dependent upon it, and their intensity being directly proportionate to the excess of heat. Chapter II, Concerning the Methods by which the Animal Organism controls the Production and Dissipation of Heat, takes up over one hundred and forty pages; and in summing up the author says: "The only conclusion which it seems to me can be drawn is, that further and closer observation is needed before we can come to any positive conclusion as to the location of the heat-controlling center in man, but that its probable situation is in the pons." Chapter III treats of The Thermic Phenomena of Fever, in which the object of research is to determine whether the rise of temperature in fever is due to an increased production of heat, or whether it is owing simply to retention of heat. Eighty pages are given to the solution of this question, and "it appears that the following proposition is demonstrated for dogs and rabbits, and practically assured for man": "Fever is a complex nutritive disturbance, in which there is an excessive production of such portion of the bodily heat as is derived from chemical movements in the accumulated material of the organism, the overplus being sometimes less, sometimes more, than the loss of heat production resulting from abstinence from food. The degree of bodily temperature in fever depends, in a greater or less measure, upon a disturbance in the natural play between the functions of heat production and heat dissipation, and is not an accurate measure of the intensity of the increased chemical movements of the tissues." Chapter IV is devoted to the consideration of The Theory of Fever, or the mechanism of the production of fever. "In most cases of fever, and probably in all cases of serious fever, there is a definite poison circulating in the blood, the poison sometimes having been formed in the system, sometimes having entered the organism from without." Fever, then, "is simply a state in which a depressing poison or a depressing peripheral irritation acts upon the nervous system which regulates the production and dissipation of animal heat. . . . Owing to its depressed, benumbed state, the inhibitory center does not exert its normal influence upon the system, and consequently tissue change goes on at a rate which results in the production of more heat than normal, and an abnormal destruction and elimination of the materials of the tissue. At the same time the vaso-motor and other heat-dissipation centers are so benumbed that they are not called into action by their normal stimulus (elevation of the general bodily temperature), and do not provide for throwing off the animal heat until it becomes so excessive as to call into action by its excessive stimulation even their depressed forces. Finally, in some cases of sudden and excessive fever, as in one form of the so-called cerebral rheumatism, the enormous and almost instantaneous rise of temperature appears to be due to a complete paralysis of the nervous centers presiding over heat production and dissipation."

On Certain Conditions of Nervous Derangements: Somnambulism, Hypnotism, Hysteria, Hysteroid Affections, etc. By William A. Hammond, M. D., Surgeon-General, U. S. Army (retired list), etc. New York: G. P. Putnam's Sons, 1881. Pp. 256. Price, $1·75.

This is virtually a second edition of the author's book on "Spiritualism and Nervous Derangement," published a few years ago, and differs from its predecessor chiefly in a rearrangement of the sequence of its chapters and the omission of one hundred and twenty-four pages relating to spiritualism. As regards the new matter of the present issue, we find in the first chapter (Chapter XII of the previous edition) a page interpolated recounting the author's experiment of "hypnotizing" a dozen crabs in Fulton Market, and a page and a half appended concerning the dietetic and medicinal treatment of somnambulism. It is to be regretted that this chapter was published too early to embody the author's views concerning Dr. Beard's recent experiments and hypotheses in the matter of "trance," and those of Charcot and Lépine touching the interconvertibility of "hysterical lethargy" and the "cataleptic state." It needs the specialized leisure of a keen observer to separate the wheat from the chaff in the multitude of such rather loosely conducted experiments; to determine how much is due to the perhaps unintentional suggestive influence of the experimenter, how much to any neurosis in the patient from which laws of morbid action can be realized.

At the end of Chapter II a paragraph is appended dissenting from Mr. Francis Galton's views as to the desirability of being able to form "mental images." Chapter III (Chapter XIV of the earlier edition) is prefaced with five pages of new matter, recounting the alleged fasting exploits of Liduane, of Schiedam, St. Joseph, of Copertino, Nicolas, of Flue, and others. Among the more modern instances of total abstinence we miss the name of Mrs. Simeon Hays, of Chester, New York, of whose two years' fast an "authentic narrative" was published in 1858, by the Rev. Mr. Milne, and attested by several medical gentlemen, including the President of the Warren County Medical Society. Nor is mention made of the late public exhibition of Dr. Tanner, touching the genuineness of whose performance we should have liked to learn the author's opinion.

Chapter VI of the present issue is Chapter IX of the former, with the interpolation of five lines on page 217 to note Charcot's revival of Burq's "metal cure," and a brief allusion to the chapel at Knock and Father Ignatius's Abbey.

Chapter I of the first edition constitutes the final chapter of this, the headings of the pages alone being altered so as to omit the word "Spiritualism" which gave the earlier book its title. This chapter is extended by an abstract of a clinical lecture delivered by Dr. Hammond in 1878, rehearsing his own experiments with the so-called "metal cure," whereby he demonstrated the equal efficacy of disks of tortoise-shell or wood—a demonstration which has led to sundry recent disquisitions abroad on "xylotherapy" and the different electricities of divers kinds of wood, which eminently scientific method of ratiocination is even brought to bear upon the virtues of slippery-elm poultices and collodion.

Altogether, although the book is not so fully "up to date" as the author's known energy might have led us to expect, it gives a fair summary of many points which are attracting much attention from the medical profession as well as from the public; and, if its explanations be rather ingenious than satisfactory in many respects, it is because the phenomena of which it treats—the whole range, indeed, of mental and emotional physiology—require much further investigation before they can be subjected to scientific classification.

Anatomical Plates, arranged as a companion volume for "The Essentials of Anatomy" (William Darling and A. L. Ranney), and for all works upon Descriptive Anatomy. Comprising four hundred and thirty-nine designs on steel by Professor J. N. Masse, of Paris, and numerous diagrammatic cuts selected or designed by the editor, together with explanatory letter-press. Edited, with revisions, from the original translation of Professor Granville Sharp Pattison, by Ambrose L. Ranney, A. M., M. D., Adjunct Professor of Anatomy in the Medical Department of the University of the City of New York, etc. New York: G. P. Putnam's Sons, 1881. [Price, $3.]

This is the revised title-page of the Messrs. Putnams' edition of Masse's plates. The title-page of the copies first issued by them will be found in our May number, under the head of "Books and Pamphlets Received." The circumstances of the revision are explained by the publishers in a circular, dated April 30, 1881, of which we have received a copy, and which reads as follows: "Messrs. G. P. Putnam's Sons desire to state that, through a clerical error, the name of the late Professor Granville Sharp Pattison, as translator and editor of the edition of Masse's Anatomical Plates issued in 1845, has been omitted from the title-page of their present edition. They would also explain that Professor Ranney's labor as editor embraced such alterations of the plates and text as were required to bring these fully up to date, together with the preparation of important new material in the way of diagrams and descriptive text." This explanation is very creditable to both the editor and the publishers, showing a praiseworthy desire to give due credit even for work which can not have cost the original translator much effort.

Concerning the plates themselves, they are, in the main, excellent impressions of very fine engravings—far superior to any of the sort that have heretofore appeared in this country. We think that Dr. Ranney has materially enriched the work by the illustrations that he has added, which are in great measure diagrammatic, and therefore of more real value to the student than even the elaborate and beautiful plates of Masse. As a whole, the book in its present form seems to us a very desirable one for the student of anatomy, and we are pleased to see that it is produced in a volume of uniform size with Darling and Ranney's "Essentials of Anatomy," of which it is a fitting companion.

Atlas of Skin Diseases. By Louis A. Duhring, M. D., Professor of Skin Diseases in the Hospital of the University of Pennsylvania, etc. Part VIII: Erythema Multiforme (Papulosum), Psoriasis, Syphiloderma (Tuberculosum), Tinea Trichophytina (Circinata et Tonsurans). Philadelphia: J. B. Lippincott & Co., 1880. 4to, colored plates.

The long delays in the appearance of the different numbers of "Duhring's Atlas" are somewhat annoying, but doubtless to no one more so than to the author himself. There must be peculiar vexations and difficulties connected with the authorship of a systematic series of plates on cutaneous diseases, particularly when the delineation has to be intrusted to artists whose regard is naturally greater for pictorial effect than for the correct representation of certain diagnostic features which can not be properly appreciated except the diseases represented have been made the subject of special study.

The present number of the "Atlas" does not appear to us to be quite up to the average of excellence which the previous numbers have maintained. In particular, the plate representing a tubercular syphilide falls short, we think, of the desirable standard. Were it not for the locality and arrangement of the eruption, we doubt if a diagnosis could easily be made. The spots have too much the appearance of those from simple irritative or inflammatory lesions. If a comparison be made between certain spots in this plate and some of those in the plate representing a papular erythema, we doubt if any very material difference can be discovered. The plate representing psoriasis errs, we think, on the side of being too faintly pronounced —a rare fault, almost a commendable one, in illustrations of skin diseases. Psoriasis is one of the most striking to the eye of all cutaneous affections. The artist might safely have ventured a little more here with his "high lights." There can be no mistake, however, as to what the disease is. The "Tinea trichophytina" is excellent, and the "Erythema" of the hands is also good.

A Practical Treatise on the Medical and Surgical Uses of Electricity, including Localized and General Faradization, Localized and Central Galvanization, Electrolysis, and Galvano-Cautery. By GEORGE M. BEARD, A. M., M. D., and A. D. ROCKWELL, A. M., M. D., Fellows of the New York Academy of Medicine, etc. Third edition, revised by A. D. ROCKWELL, M. D. With nearly 200 illustrations. New York: William Wood & Co., 1881. Pp. xxx–758.

THE present edition contains two new chapters on the sequelæ of acute diseases, and on exophthalmic goître, and revisions of the sections on diseases of women and extra-uterine pregnancy. Some pages have been omitted in the discussion of electro-diagnosis. Various other additions and modifications qualify the work to maintain the popularity which it has hitherto enjoyed. The additions are about compensated for by omissions, so that the size of the book remains the same.

A Treatise on Albuminuria. By W. HOWSHIP DICKINSON, M. D., Cantab., F. R. C. P., Physician to St. George's Hospital, etc. Second edition. New York: William Wood & Co., 1881. Pp. xii–300. [Wood's Library of Standard Medical Authors.]

FROM the preface we learn that "the leading views formerly expressed remain unaltered" in this edition. Gull and Sutton's *arterio-capillary fibrosis* is fully reviewed, and the author concludes that "the cardio-vascular change is not associated with the renal as a coeval fibrosis, but is directly produced by it." The term lardaceous is substituted for depurative in that form of kidney.

BOOKS AND PAMPHLETS RECEIVED.—An Introduction to Pathology and Morbid Anatomy. By T. Henry Green, M. D., Lond., F. R. C. P., etc. Fourth American, from the fifth revised and enlarged English edition. With 138 fine engravings. Philadelphia: Henry C. Lea's Son & Co., 1881. Pp. xx–17 to 347, inclusive. [Price, $2·25.] ═══ The Student's Manual of Histology, for the use of Students Practitioners, and Microscopists. By Charles H. Stowell, M. D., Assistant Professor of Physiology and Histology, and the Instructor in the Physiological Laboratory of the University of Michigan. Illustrated by 192 engravings. Detroit: George S. Davis, 1881. Pp. 290. ═══ Experimental Researches on some points relating to the Normal Temperature of the Head. By J. S. Lombard, M. D., formerly Assistant Professor of Physiology in Harvard University. I. On Some Points relating to the Temperature of the Head. II. Effect of Voluntary Muscular Contractions. III. Influence of the Temperature of the Air. London: H. K. Lewis, 1881. Pp. 39–45–16. ═══ Lectures on Diseases of the Nervous System, especially in Women. By S. Weir Mitchell, M. D., Member of the National Academy of Sciences, etc. With five plates. Philadelphia: Henry C. Lea's Son & Co., 1881. Pp. 238. ═══ The Diseases of Children: a Practical and Systematic Work for Practitioners and Students. By William Henry Day, M. D., author of "Headaches," etc. Second edition, rewritten and much enlarged. Philadelphia: Presley Blakiston, 1881. Pp. 752. [Price, $5.] ═══

Lectures on Diseases of Bones and Joints. By C. Macnamara, F. R. C. S., Eng., Surgeon and Lecturer on Surgery at the Westminster Hospital, etc. Second edition. London: J. & A. Churchill, 1881. Pp. xii–551. ==== A System of Oral Surgery: being a Treatise on the Diseases and Surgery of the Mouth, Jaws, and Associate Parts. By James E. Garretson, M. D., D. D. S., Dean of the Philadelphia Dental College, etc. Illustrated with numerous steel plates and woodcuts. Third edition, thoroughly revised, with additions. Philadelphia: J. B. Lippincott & Co., 1881. Pp. 916. [Price, $8.] ==== Hydrophobia. By Horatio R. Bigelow, M. D., etc. Philadelphia: D. G. Brinton, 1881. Pp. 154. ==== Report on Trichinæ and Trichinosis. Prepared, under direction of the Supervising Surgeon-General, by W. C. W. Glazier, M. D., Assistant Surgeon, Marine-Hospital Service. Published by order of Congress. Washington: Government Printing-Office, 1881. Pp. 212. ==== Nocturnal Incontinence of Urine. By Tom Robinson, M. D., L. R. C. P., Lond., M. R. C. S., and L. S. A., Assistant Surgeon to St. John's Hospital for Skin Diseases, etc. London: Henry Kimpton, 1881. Pp. 15. ==== The Metric System in Medicine. Containing an account of the Metric System of Weights and Measures, Americanized and simplified, a comprehensive Dose Table, and three hundred Practical Illustrations of Metric Prescription Writing, selected from Recipes in actual use in hospital and out-door practice. By Oscar Oldberg, Phar. D., Medical Purveyor, U. S. Marine-Hospital Service, etc. Philadelphia: Presley Blakiston, 1881. Pp. 182. [Price, $1·50.] ==== Photographic Illustrations of Cutaneous Syphilis. By George Henry Fox, A. M., M. D., Clinical Lecturer on Diseases of the Skin, College of Physicians and Surgeons, New York, etc. Parts 7, 8, 9. New York: E. B. Treat. ==== A Manual of the Practice of Medicine, designed for the use of Students and the General Practitioner. By Henry C. Moir, M. D. New York, 1881. Pp. x–455. ==== What Every Mother Should Know. By Edward Ellis, M. D., late Senior Physician to the Victoria Hospital for Sick Children, etc. Philadelphia: Presley Blakiston, 1881. Pp. xii–17 to 132, inclusive. [Price, 75c.] ==== The Diet Cure: an Essay on the Relations of Food and Drink to Health, Disease, and Cure. By T. L. Nichols, M. D., etc. New York: M. L. Holbrook & Co. Pp. viii–88. ==== Progress in Medical Education, etc. By J. Adams Allen, M. D., etc. ==== Fourth Series of Twenty-five cases of Completed Ovariotomy. By G. Granville Bantock, M. D., F. R. C. S. Ed., etc. [Reprint.] ==== Vox Humana: or, the Art of Singing, from a Medical Point of View. By Herbert Junius Hardwicke, M. D. [Reprint.] ==== Das Verhalten der Sinnesorgane im hypnotischen Zustand. Von Dr. Oscar Berger. [Reprint.] ==== Dei Rapporti fra il Clima e la Tisi Polmonare. Studj di Climatologia Medica del Dott. G. B. Ughetti. [Reprint.] ==== Shortening of Limbs after Fracture. By Lewis A. Sayre, M. D. [Reprint.] ==== A Case of Primary Tuberculosis of the Larynx. By J. Solis Cohen, M. D. [Reprint.] ==== Further Note concerning Accessory Facial Foramina. By A. H. P. Leuf. [Reprint.] ==== Trance and Trancoidal States in the Lower Animals. By George M. Beard, M. D. [Reprint.] ==== Transactions of the Medical Society of the State of New York for the year 1880. ==== Sixty-seventh Annual Report of the Trustees of the Massachusetts General Hospital. ==== Thirty-eighth Annual Report of the Managers of the State Lunatic Asylum, Utica, N. Y., for the year 1880. ==== Eighth Biennial Report of the Trustees, Superintendent, and Treasurer of the Illinois Asylum for Feeble minded Children at Lincoln.

Clinical Reports.

BOSTON DISPENSARY.

Reported by J. Foster Bush, M. D.

THREE CASES OF ASTHMA TREATED WITH IODIDE OF ETHYL.

(Service of Dr. R. M. LAWRENCE.)

Case I.—Mary D., a stout, middle-aged woman, applied for treatment October 15, 1880. During a severe attack of bronchitis, the previous winter, her respiration became wheezy, and true spasmodic asthma developed, the symptoms of which persisted. She had a troublesome cough, and was kept awake at night by attacks of dyspnœa, which lasted for some hours. After a few minutes' inhalation of the vapor of the iodide of ethyl from a small vial containing a drachm of the drug, there was an evident improvement in the respiration, which became freer and more buoyant. Three daily inhalations, of ten minutes each, were prescribed, to be repeated at night should paroxysms occur. After one week of this simple treatment, the patient reported that she had been greatly benefited. The "spells" of dyspnœa were less frequent and much less severe, and a resort to the inhalations sufficed in every instance to give speedy relief. This patient has been under observation for four months, and states that her asthma has been positively "driven off."

Case II.—Mary J., aged twenty-nine years, of pale, anæmic appearance, came under treatment October 29, 1880. She contracted spasmodic asthma when a child of twelve years old. She states that it is hereditary in her family. Her breathing is habitually labored and noisy, and she has occasional attacks of marked dyspnœa. A slight cold easily provokes bronchial spasm, and the air passages become clogged with mucus. She has tried the ordinary remedies without benefit. After five minutes' inhalation of iodide of ethyl, the breathing was easier and no longer wheezy. The only physiological effect observed was a feeling of mild invigoration of the functions, and especially of the respiration. The patient now commenced a systematic trial of this mode of treatment, and reported that the result was most satisfactory. She was seen at frequent intervals, and after ten weeks stated that not only could she breathe with comfort ordinarily, but had had no paroxysms during this period.

Case III.—Joanna W., aged sixty-four years, applied November 26, 1880. She has suffered from bronchitis, with wheezy, difficult respiration, for the past four years. She has also a troublesome, dry cough. Paroxysmal dyspnœa occurred frequently in the evening and early morning. She has had but little relief from many different remedies. The effect of the inhalations in this case was almost immediate, and a continuance of the treatment caused a permanent improvement in the character of the breathing, the cough also becoming looser. She has now no dyspnœa, except upon unusual exertion, and this is quickly relieved by the iodide of ethyl.

REMARKS BY DR. LAWRENCE.

In former papers* I have presented the results of a careful and somewhat extended study of the physiological and therapeutic effects of the iodide of ethyl, and also attempted to explain the several modes of action of the drug when inhaled for the relief of different forms of dyspnœa.

Its speedy absorption into the blood, its antispasmodic quality, and prompt reflex stimulation of the respiratory muscles may reasonably account for its beneficial action in the asthmatic paroxysm, while its power of liquefying and detaching accumulations of mucus sufficiently explains its curative influence in chronic bronchitis.

Dr. Laurence Turnbull writes me, quoting from his work on "Anæsthetics": "Iodine in this form (i. e., iodide of ethyl) is valuable in cases of chronic bronchitis for its alterative and mechanical distention of the air cells of the diseased lungs, and also for assisting the patient in removing diseased secretions." Further experience has confirmed my faith in its remedial worth in a large majority of cases of labored respiration (whether due to bronchial spasm or to increased mucous secretion) and also in certain obstinate cases of dyspnœa, not due to organic pulmonary or cardiac lesions, where other remedies may have proved inefficient. In a small minority of cases it has failed to afford relief.

I do not wish to be understood as recommending this drug as a substitute for internal medication, but rather as an adjunct thereto. We are told † that asthma must remain a stig ma onmedical science until its pathology is understood, and that "the ideally perfect treatment would be to apply such remedies as, by removing the urgent symptoms, would exert at the same time a favorable influence upon the disease itself." Now, this, I think, is precisely what the drug in question is capable of doing in very many cases. To say in *all* cases would be to assume that we had here that *specific* for asthma which has been sought in vain for so long.

It has been stated ‡ that iodide of ethyl is capable of producing anæsthesia, as proved by experiments with fowls, frogs, and plants. It is certain, however, that in the case of human beings the drug is of no value for this purpose. In our own case, a half hour's inhalation has failed to produce even drowsiness.

Proceedings of Societies.

NEW YORK OBSTETRICAL SOCIETY.

A STATED meeting was held March 1, 1881, Dr. JAMES B. HUNTER, President, in the chair.

DERMOID CYST OF THE OVARY.—Dr. MANN presented a specimen with the following history: Last summer he was called by Dr. Booth, of Hartford, Conn., to see a colored woman, forty years old, who, it was supposed, had an ovarian tumor. For reasons connected with the surroundings of the patient, it was decided to postpone operative interference, other than tapping for the purpose of affording temporary relief. Accordingly, Dr. Mann tapped, and drew off about a quart of fluid, and the patient was made quite comfortable. In October she again began to suffer from pressure produced by the tumor, and he determined to operate at once. The tumor was not large, but the abdominal walls were very tense. When the tumor was reached, no adhesions were found, and a trocar was inserted, but only a comparatively small quantity of fluid was withdrawn. Dr. Mann then endeavored to remove the tumor, but when traction was made upon it he found that he was unable to do so, and therefore he enlarged the abdominal incision sufficiently to admit his hand, when it was found that the tumor had no pedicle, but was attached to the uterus, which was high up, to the parts within the pelvic cavity, and on the right side of the pelvis, up to the ilio-pectineal line. He introduced a trocar a second time, and drew off what were apparently the contents of one or two cysts; then passed the trocar into other cysts, and finally succeeded in removing sufficient fluid to enable him to bring part of the sac through the abdominal wound. He then made a long incision into the tumor, introduced his hand, and broke up the partition walls, removing large handfuls of cyst contents which showed that the tumor belonged to the dermoid variety, and finally brought a considerable portion of the sac to the outside of the abdomen. But there was no pedicle; he therefore made strong traction, separated the tissues as well as he could, making a kind of pedicle to the abdominal sac, tied it *en masse*, and then removed the remaining portion of the tumor. He then passed a silk ligature through the middle of the stump and tied it firmly toward the uterus, and upon the other side he tied with the cobbler's stitch toward the middle of the stump and left an opening in the walls of the sac, which he sewed to the edges of the abdominal wound, and then inserted a drainage tube through the upper angle of the abdominal incision, and also into the sac itself. Every antiseptic precaution was observed throughout the operation, which lasted nearly three hours, and the patient's condition remained good until toward its close, when it became necessary to give her hypodermic injections of brandy very freely. The wound was dressed with borated cotton wet in carbolized water, and the drainage tubes were plugged with borated cotton. A soft rubber catheter was introduced into the bladder, and fastened in position with a strip of adhesive plaster attached to the thigh. Reaction set in, and on the morning following the operation the patient's general condition was good, both pulse and temperature being below one hundred. Her mental condition, however, was somewhat disturbed, and to quiet her singing and talking an hypodermic injection of morphia was given. Vomiting followed soon afterward, but it was controlled by another hypodermic of morphia. Vomiting occured again, however, and the fluid ejected had the appearance of that vomited in peritonitis. There was no elevation of temperature, and the appearance of her face was good. Hypodermics of morphia were continued, but the vomiting also continued, and finally the morphia was stopped and the vomiting ceased within twelve hours. On the fourth day the patient's temperature rose to 102° F., and fetid material was oozing from the lower angle of the wound. Upon opening the wound at that point, a small quantity of fetid pus escaped, and the temperature quickly subsided. From that date the patient steadily improved, and went out of doors at the end of six weeks. Soon after this she had a slight chill and intense pain over the region of the liver, with a moderate elevation of temperature. The severity of the symptoms was relieved by the use of poultices, blisters, etc.; but she gradually failed. Subsequently phlegmasia dolens developed in the left leg, and, with slight fever, loss of appetite, and general emaciation, the patient died, three months after the operation. At the autopsy the wound was found open so as to admit the little finger a short distance, and from that point a fistula communicated with a small cyst. On opening the abdominal cavity, a mass of soft substance was encountered, looking somewhat like brain matter, of about half the size of one's fist, and apparently connected with the omentum; and the omentum, which had given no trouble during the operation, was covered with small nodules or cysts, which contained a dark, grumous material, having a somewhat fetid odor. The fistula led into a small sac attached close to the uterus. Beneath and behind the uterus was another large cyst, and it was apparently beneath the mesentery. The specimens had not been examined microscopically, but the gross appearance at the time of the autopsy was very much like that presented by malignant disease. The kidneys were of the large, white variety, and the liver was covered with plastic exudation.

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* "Boston Med. and Surg. Jour.," April 29, 1880; "Med. Record," June 19, 1880.

† Dr. Berkart, in Braithwaite's "Retrospect," Jan., 1881.

‡ "Month. Rev. of Med. and Pharm.," July, 1880.

Glass Stem-Pessary.—Dr. Chamberlain exhibited a solid glass stem-pessary, to be worn for the purpose of straightening the uterus. The only peculiarity about it was that, fully half an inch from the button upward, the stem was reduced in diameter, the object being to allow the os uteri to clasp it and hold the stem in position. It had been worn without inconvenience during menstruation. ═══ The President referred to a case in which a solid glass plug had so occluded the cervix that the menstrual flow could not take place. When it was removed, a gush of blood followed. He thought that the perforated plug would have prevented the difficulty.

Death after an Operation for Laceration of the Cervix Uteri.—The President narrated a case as follows: A patient, forty years of age, had had a laceration of the cervix for eight years. Some years ago the diagnosis of epithelioma had been made, and the condition of the cervix at the time of the operation was such as to suggest the beginning of malignant disease. After consultation with Dr. Thomas and Dr. T. A. Emmet, Dr. Hunter performed the operation on the 16th of February, and at the same time curetted the mucous membrane of the body of the uterus. The patient came from under the influence of ether in such intense pain as to require frequent hypodermic injections of morphia. On the following day there was distinct evidence of peritonitis, and she died of exhaustion on the tenth day. He thought that the peritonitis must have been due to rupture of some cyst into the peritoneal cavity, and not to the operation itself. An autopsy could not be obtained. The President remarked that he had not seen peritonitis due to operation for laceration of the cervix, although he had seen it follow incision of the cervix. In the case just reported the uterus was perfectly movable. ═══ Dr. Mundé inquired whether the President had seen cellulitis following the operation. ═══ The President replied that he had seen three cases, but in all there was a history of previous cellulitis. ═══ Dr. Ward thought the condition of the President's patient when she came from under the influence of the anæsthetic should be emphasized. He believed that the death should be attributed to some accident, like the rupture and discharge of the contents of a cyst into the peritoneal cavity, rather than to the operation for laceration of the cervix. He recalled a case which he had reported several years ago, in which an hypertrophied clitoris was removed by means of the galvanic cautery. The patient did well for ten days, when she was suddenly attacked with general peritonitis, from which she died, and at the autopsy a cyst was found in the right Fallopian tube, from which pus had been discharged. —— Dr. Mundé related a case which illustrated great tolerance of manipulation of the cervix, in a patient who had so-called chronic pelvic peritonitis. The uterus was fixed completely, there was a bilateral laceration of the cervix up to the vaginal insertion, and the vaginal vault was of board-like hardness. Under the use of the tincture of iodine, painted upon the vaginal vault, hot-water injections, etc., the patient improved, but at the end of two months the parametric tissues did not exhibit any signs of becoming softer, and he then began to gradually accustom the lips of the cervix to approximation; and finally he introduced two silver sutures, closed the cervix, and allowed the patient to go. She wore the sutures without inconvenience until her next visit to his office, two weeks later, when they were found loose. They were removed, and two more were introduced farther back. This kept the lips of the cervix together perfectly, and she went another week, when he performed the regular operation and applied eight sutures. On the fourth day she got out of bed, contrary to directions, and on the following day came to his office, when she was directed to return to her bed. The stitches were removed on the ninth day, and union was complete. On the tenth day she walked two miles, and not the slightest evidence of inflammatory action followed. —— Dr. Mann referred to a case in which he performed the operation for an extensively lacerated cervix. There had been previously neither cellulitis nor peritonitis. The patient did well for several days, when she got out of bed and assisted in moving, and when Dr. Mann next saw her he found that the stitches had all been torn out, and that extreme cellulitis had followed. She was transferred to Roosevelt Hospital, where, under the care of Dr. Watts, she made a very good recovery. The case illustrated the necessity of quiet after the operation. —— The President thought it was a safe precaution to keep the patient in bed a week. He thought that dragging the uterus down was as likely to do harm as the operation itself. —— Dr. Mundé referred to a case in which he operated, keeping the patient in bed a week or more, and then found that union had not taken place. He then scraped the edges of the wound, introduced silver-wire sutures, and told the patient to go about her daily occupation. On the tenth day he removed the sutures at his office, and found union complete, with the exception of a small cervico-vaginal fistula, which was closed by applying nitrate of silver. —— The President thought that the upright posture had no great tendency to separate the flaps. The chief danger from allowing the patient to get up was that it might cause cellulitis.

What have been the Results in Labors following the Operation for Laceration of the Cervix?—The President thought that the cervix was no more liable to be lacerated in labors following the operation than it was originally. He had seen three cases, Dr. Mundé had had two cases, Dr. Peaslee referred to one case, Dr. Watts had had one case, Dr. Mackenzie one case, and Dr. Mann two cases, in which the operation had been performed and the patients had subsequently passed through labor without further laceration. —— The President remarked that, so far as rupture of the perinæum was concerned, it had not occurred in subsequent labors in the larger proportion of the cases he had seen.

What has been the Result of the Operation for Laceration of the Cervix with Reference to making the Os too small?—Dr. Ward had not seen sterility attributed to the operation. Dr. Mann had seen one case in which the os admitted a probe but not a sound. The PRESIDENT had seen one case of pin-hole os as a result of the operation, but it was sufficiently large to allow menstrual fluid to escape. ═══ Dr. FOSTER asked what degree of stenosis of any portion of the uterine canal would cause sterility. He did not believe that any degree of stenosis short of occlusion would prevent conception. ═══ The PRESIDENT thought that with a minute os externum the probabilities of sterility were increased. ═══ Dr. MUNDÉ remarked that spermatozoa doubtless could pass through an opening which permitted the escape of menstrual fluid. ═══ Dr. FOSTER again asked, " Are there any well-ascertained facts to show that narrowing of the cervical canal can produce sterility ? " ═══ Dr. MUNDÉ remarked that in many cases no cause of sterility could be found except the existence of a long conical cervix, and in some of those cases pregnancy had followed cutting and dilating measures. ═══ Dr. FOSTER remarked that such was not a convincing statement, because many women went for years without bearing children, and finally became pregnant without any operative interference whatever. ═══ Dr. WARD recalled two cases, one in which the woman, previously sterile for many years, became pregnant immediately after dilatation of the cervix with a sponge tent, and in the other the pregnancy followed quickly after an operation performed by the late Dr. James L. Brown. ═══ Dr. MANN referred to two cases of sterility, one of thirteen years' standing, in which pregnancy followed the next menstruation after the introduction of a sound. ═══ Dr. MUNDÉ remarked that the occurrence of pregnancy after the introduction of a sound did not prove that the previous sterility was due to a narrowed cervical canal. It might be a case of simple relative stenosis caused by slight anteflexion or slight endotrachelitis, etc., the temporary correction of the condition permitting pregnancy to occur. He thought that impregnation had more frequently followed dilatation than cutting operations.

A STATED meeting was held March 15, 1881, Dr. JAMES B. HUNTER, President, in the chair.

Dr. GARRIGUES, the pathologist, reported on the case of extra-uterine pregnancy presented by Dr. Foster at the meeting on February 15th. The chief point of interest connected with the specimen consisted in an elongation of the cervix and the isthmus. The exact depth of the cavity of the body and of the cervix was four and a half inches ; the depth of the cavity of the body alone, one inch and five eighths ; the length of the isthmus, seven eighths of an inch ; the length of the cervix, two inches. There was no enlargement of the organ in width. It was evident, therefore, that it had been dragged up by some tumor. The left round ligament and Fallopian tube were normal ; the left ovary, slightly enlarged. In the left broad ligament there was a cyst of the size of a hickory-nut. On the right side there existed a piece of the Fallopian tube two inches in length, but no fimbriæ, ovary, or round ligament. The walls of the fetal sac were from one eighth to one fourth of an inch thick. The specimen afforded no clew to the situation of the sac. The placenta, which was attached, was nine inches by six and a half. It was unusually thick, one inch and one third, at its attachment. The child was a well-developed male, and weighed 2,350 grammes.

ARRESTED DEVELOPMENT OF THE EYEBALLS.—Dr. RODENSTEIN presented a child, four months old, with an apparently complete arrest of development of the eyeballs. The mother had borne eight children. In the third there was imperfect development of the mouth, with cleft palate, and the child died of exhaustion at the eighteenth month. No hereditary tendency could be discovered.

PILOCARPIN IN NEPHRITIS FOLLOWING SCARLATINA ANGINOSA.—Dr. RODENSTEIN related the history of a case, as follows: On January 19, 1881, he was called to see Alice P., aged eight years, whom he found suffering from fully-developed scarlatina anginosa. He saw the patient again next day, and then, being called from the city, left her in the care of Dr. Robert Newman, who gave her the utmost attention. On the fifteenth day of the disease there were evident symptoms of desquamative nephritis. In spite of all treatment with diuretics, hydragogue cathartics, diaphoretics, etc., the disease seemed to continue on its apparently fatal course. Dr. Rodenstein saw the child again on the 12th of February, the twenty-second day after the beginning of the disease. Her countenance was pale, there was puffiness all over the body, particularly under the eyes; the intellect was clear, the sight was exaggerated, she saw double, the pupils were dilated, there were frontal headache, loss of appetite, vomiting, a hot dry skin; the temperature was 105° F. in the rectum; the pulse was frequent, sharp, and intermittent, about 150. The secretion of the kidneys was considerably less than half a pint in twenty-four hours, and contained about seventy-five per cent. of albumen. He ordered infusion of digitalis, acetate of potassium, calomel and jalap, steam and hot-air baths, dry cups over the kidneys, etc., all of which had no apparent effect upon the disease. On the morning of the 13th of March he was hastily summoned, and found the patient in the most violent uræmic convulsions, which lasted, without abating, for five hours and a half. He used the cold-water pack, afterward steam baths, elaterium, stimulating injections per rectum, and chloroform by inhalation. The urine was drawn from the bladder, and under heat became semi-solid. No improvement in the symptoms was noticed. He then injected hypodermically five minims of a two-per-cent. solution of pilocarpin, and within a few minutes afterward the child was in a profuse perspiration, and ptyalism set in. The convulsions gradually diminished. The urine was again examined, and the albumen was found to diminish in the ratio of the increase in the quantity of urine. The temperature and pulse were as follows: *February 13th*, 3 P. M.—Temperature 106° F. in the rectum; the pulse could not be counted. At 4 P. M. temp. 105°, pulse 150. 5 P. M. temp. 104·5°, pulse 140. The urine was again examined and found to contain seventy-five per cent. of albumen. At 6 P. M. temp. 103°, pulse 140. 7 P. M. the temperature and the pulse the same. 9 P. M. temp. 102·5°, pulse 130. Midnight, temp. 102·5°, pulse 130. *14th.*—6 A. M. temp. 102°, pulse 120. The urine was examined and found to contain about fifty per cent. of albumen. The child slept three hours quietly. There was no return of convulsions. From this time on the urine increased in quantity, all the symptoms became less alarming, and the patient made a rapid and good recovery. Dr. Rodenstein said he mentioned the case simply to call the attention of the society to the prompt response of the disease to the timely use of pilocarpin. ═══ Dr. PERRY said he had been watching the effects of this drug in cases of suppression of urine, and he thought this was the most favorable case of which he had heard. ═══ Dr. RODENSTEIN said he had seen the drug used by Dr. Mann in the case of his own child, which was suffering from suppression of urine due to cerebro-spinal meningitis. In that case one hypodermic injection of five minims of a two-per-cent. solution induced profuse perspiration and salivation within two minutes. ═══ The PRESIDENT said he had seen it used several times hypodermically in the hospital, and its effects were very prompt. ═══ Dr. Jenkins had used it twice and got very decided effects within five minutes at most, in one case producing not only salivation but bronchorrhœa.

A regular meeting was held April 5, 1881, Dr. H. D. Nicoll, Vice-President, in the chair.

A Hæmorrhoidal Clamp.—Dr. Skene presented an instrument, a modification of Speir's artery constrictor, to be used for clamping and ligating hæmorrhoids. It was difficult to seize and tie a hæmorrhoidal tumor in the ordinary way; that difficulty would be greatly diminished by the use of the instrument presented. He had found it of great advantage not only in that respect, but also in causing the patient much less pain during the operation. He thought that, by enlarging it, it might be made to do equal service in ligating the stump of an ovarian tumor. By it the tumor was seized and clamped, and the ligature, which passed through the eye of the instrument, was tightened around the tumor, and all slipping and breaking of the ligature, as frequently occurred by the ordinary method, was avoided.

Hæmatocele from Tubal Pregnancy; Death.—Dr. Noeggerath related the history of a case as follows: A woman, forty years old, residing in Connecticut, came to New York a few days ago for a change of air. She had borne three children, the last one three years ago; after that she had pneumonia, and subsequently hæmorrhage from the lungs, but when she came to the city she was complaining only of general weakness and depression. She had last menstruated two weeks ago. On Friday night last she was taken suddenly with an attack, apparently of cholera-morbus, beginning with vomiting and watery evacuations from the bowels, which continued during the night. Dr. Griswold was called in and prescribed for her. At ten o'clock Saturday morning, while sitting on the vessel, having a passage from the bowels, she fainted and fell back. Dr. Griswold again saw her, and did everything possible to resuscitate her, but she died within two hours, after suffering from little pain. At the post-mortem examination the left Fallopian tube was found to be much enlarged and the tissues swollen, and about half an inch from its attachment to the uterus it was ruptured. Attached to it at that point, but carried outside, was a small piece of membrane. The tube itself was filled with blood. Nothing abnormal was discovered in the ovaries, except a depression in the left one, which appeared like a cicatrix. The uterus, the depth of which was three inches, was enlarged in all its diameters, and contained a deciduous membrane. The left tube contained the chorion. The fœtus had evidently escaped into the abdominal cavity, and had been carried away in the general hæmorrhage. It was evident from the appearance of the tube that pregnancy had not existed longer than about two weeks, and the woman had ceased to menstruate a fortnight before; the case was, therefore, interesting from the fact that it showed that pregnancy began after the last menstruation. The tendency of some recent and good writers was to reckon from the time when a menstruation failed to occur. ═══ Dr. Nicoll recalled a similar case in his practice, which occurred five or six years ago. He was called to see a woman who was suffering from great pain and symptoms of internal hæmorrhage. Two weeks had passed since she should have menstruated. Within six or eight hours she died, and a post-mortem examination revealed enlargement and rupture of the left Fallopian tube, with all the appearances of a tubal pregnancy, the fœtus having escaped through the rupture into the abdominal cavity and become lost.

CROUPOUS (?) MEMBRANE EXPELLED FROM THE BLADDER.—Dr. HARRISON presented a membrane which was a complete cast of the bladder, from which it was recently expelled. The woman was a patient of his, whom he had delivered of a large child by turning about three weeks ago, but a laceration of the perinæum into the sphincter ani resulted, which he sewed up. Retention of urine occurred, for which the catheter was passed sufficiently often. The patient suffered great pain at the time of the expulsion of the membrane. A physician who had examined the membrane microscopically pronounced it croupous in character. ═══ Dr. GARRIGUES remarked that membranes, casts of the bladder from which they had been expelled, had usually been found to be the mucous membrane.

HYDATIDIFORM MOLES.—Dr. WARREN presented such a specimen for Dr. E. F. Ward. The patient was supposed to be three months pregnant, when pain came on, and a number of hydatidiform bodies were expelled from the uterus with a portion of placenta, and others were removed afterward. ═══ Dr. GARRIGUES referred to the fact that such bodies were not true hydatids, but hydatidiform moles, the result of a kind of œdema of the tufts of the chorion. He had seen them of much larger size than the specimen presented; as large as a child's head. ═══ Dr. MUNDÉ remarked that a diagnostic point in such cases was an enlargement of the uterus out of proportion to what it should be for the supposed period of pregnancy. He had had a patient who presented apparently all the signs of pregnancy at about the eighth month, but who had last menstruated only about four months before. Certain signs convinced him that it was a case of so-called uterine hydatids, and he accordingly gave her ergot, brought on uterine contractions, and a washbowlful of hydatid-like bodies was expelled. ═══ Dr. NOEGGERATH remarked that, while the uterus might sometimes be enlarged out of proportion to what it should be for the supposed period of pregnancy, the opposite was also occasionally true. He had known instances in which the development of the fœtus was arrested, occasional hæmorrhages had taken place, hydatid-like degeneration had occurred in the chorion, and it was not expelled for several months, during which time the uterus did not continue to enlarge so fast as it would have done had normal pregnancy existed. In such cases the uterus assumed a form more nearly round than in normal pregnancy—a fact of diagnostic value.

THE "HYDROCEPHALIC HABIT."—Dr. GILLETTE presented what seemed to be an hydrocephalic fœtus that had been expelled in an induced abortion at about the third month. The patient was rather a tall woman, a blonde, of the lymphatic temperament, from Kentucky. There was no history of hereditary taint on either her own or her husband's side. Eight years ago she came to the city to be confined. Dr. Gillette attended her in labor, and delivered her of an hydrocephalic child. He punctured the cranial vault, drew off considerable fluid, and delivered the child alive. After its birth, the fluid having again accumulated, he tapped the cranial vault three or four times, and drew off fluid. The woman returned home, where her child lived two or three months and died. She said, when he informed her that her child was hydrocephalic, and would have to be extracted instrumentally, that she was not surprised, for she had been delivered of four such on previous occasions. Two years afterward she returned to the city and consulted him again. He found that she was pregnant, and, at her urgent request, she feeling that a similar accident would happen again should she go on to full term, he induced abortion after consultation with the late Dr. Budd. The fœtus proved to be hydrocephalic. He heard nothing more of her until lately, when she again returned to the city and consulted him. He found she was pregnant, and tried to induce her to go on to full term, to see if she could not bring forth a healthy child, but she so greatly feared the result would be that of former experience that he induced abortion, after having held a consultation. He had not interfered with the specimen, but the general appearance was that of hydrocephalus. It would be referred to the pathologist. The case was interesting as showing a tendency to the recurrence of the same accident in women who have borne hydrocephalic children, and also from a moral point of view. He thought the induction of abortion was justified, inasmuch as the woman had borne six hydrocephalic fœtuses. He remembered having delivered another woman of an hydrocephalic fœtus, which she said was the second of the sort that she had carried.

Extirpation of the Uterus.—Dr. Thomas said that since he had last attended a meeting of the society he had extirpated the uterus twice. One of the patients was from Bridgeport, Conn., and had been under homœopathic treatment a year at the time he saw her. She was also seen by a number of physicians of Bridgeport. She had noticed, about eighteen months before Dr. Thomas saw her, that an abdominal enlargement, which had existed a long time, was increasing in size. How long it had existed before, she was not certain, nor was she sure that it was anything more than obesity. The enlargement then went on steadily increasing, until at last she became very much oppressed in breathing, and the circulation of the lower extremities became so much impeded that œdema of the feet, legs, and thighs became very marked, the effusion taking on that semi-organized condition which made the legs look very much as if they were affected with elephantiasis. The patient could not walk across the floor without suffering very greatly. The tumor gave fluctuation nowhere, and yet it did not present the appearance of a solid tumor. He took it to be one of those tumors containing very small spaces filled with a gelatinous material, which did not give fluctuation, and yet which evidently were not solid. He questioned the propriety of performing the operation of laparotomy, because he thought the chances were so much against the patient; yet he thought she ought to have the benefit of the doubt. Having fully set the dangers attending the operation before the patient's friends, and obtained their consent to have it done, he prepared the patient for it somewhat, though of necessity imperfectly. The abdominal walls were very thick, about four inches, and had been punctured to let out some of the serum, but it did not flow freely and gave the patient very little relief. In performing laparotomy he made the usual incision, from a little below the umbilicus to the symphysis pubis, and cut down upon the tumor, which he found to be so solid that on tapping it very little fluid came away. He had the patient turned on her side, when he partly removed the tumor by pieces, cutting away at each time pieces as large as a duck's egg until he had reduced the size of the tumor sufficiently to enable him to draw it out of the abdominal opening; but he found it so firmly united to the uterus posteriorly and on one side that it would have been impossible by any means to separate them. He therefore lifted the uterus, together with all of the tumor possible, out of the pelvis, and placed his large steel clamp around the deeper portion as well as he could without involving the bladder. A portion of the tumor, of about the size of a goose's egg, which evidently contained gelatinous matter, still remained. Into that he passed a drainage tube, and then clamped the uterus and tumor around the drainage tube. The cervix uteri was clamped, and a portion of the tumor above, which was so agglutinated to the pelvic structures that it could not be got out. He then severed the uterus and the tumor, and applied the actual cautery to the cut surface. The operation was performed under Lister's method. The patient entirely recovered. The portion of tumor which remained in the clamp sloughed away, and the sac was washed out with antiseptic fluids, and it gradually healed up from the bottom by granulation. The patient was now walking about. ══ The next case was in many respects similar to the first. The patient's limbs were not so œdematous, but she was pallid and the state of her blood was very bad. Her mental condition however, was favorable; she felt certain that she would recover. The tumor was small, not larger than one's head, and contained fluid; and there was something about it which from the beginning made him believe it would prove to be a tumor of the very worst character. It was situated low down in the pelvis, perfectly fixed, and presented very disagreeable features, one of which was the fact that the patient's constitutional condition had depreciated so rapidly. He performed the operation of laparotomy a week ago Saturday. Cutting down upon the tumor, he passed a trocar into it and removed a large amount of chocolate-colored, bad-looking fluid. He then tried to remove the tumor, but found that all over its upper surface, except at the line of the incision, the intestines were plastered down upon it and so fixed that it was utterly impossible to separate them, and the tumor was firmly attached to the posterior wall of the uterus, from which it had grown. He then questioned whether it was not better to close the opening and let the patient alone; but before that question came to his mind he had gone too far to retreat, and he would therefore have to do something to give the patient a chance. He accordingly cut out pieces of the sac, leaving a portion attached to the intestine rather than run the risk of tearing it away, which otherwise it would have been necessary to do. He succeeded in getting out the two larger tumors—there were three—the other was attached to everything in the pelvis, and could not be removed. He then had to remove the uterus as he had done in the other case. The general opinion of those present at the operation was that the patient would not live an hour—certainly not until the next morning. At one time the pulse could not be felt at the wrist at all, and her general condition was such that he thought she would not live to be removed from the operating table. She did live, however, for four days, and improved so much that it was thought she would recover, but she died on the fifth day. Twenty-four hours after the operation peritonitis developed; the temperature was kept down by Kibbie's method to a little below 100° F. She vomited, and was kept alive by nutritious enemata and hypodermic injections of brandy. The peritonitis seemed to be passing off, when, on the fifth day, the pulse began to flag, the extremities became cold, and she gradually sank into a comatose condition and died. Out of two cases, therefore, of extirpation of the uterus which he had performed since last meeting the society, one patient had recovered, the other had died—making his statistics of that operation at present nine cases: five recoveries and four deaths. ══ Dr. Lee, having witnessed the operation first alluded to by Dr. Thomas, was impressed with the importance of not forcibly tearing away the cyst from the intestine, for, in several instances in which he had seen it done, he doubted not that it was the cause of death. ══ Dr. Ward referred to the importance of the practice, adopted in that case, of sewing the remains of the cyst into the abdominal wound and effecting thorough drainage.

Prolapse of Intestine through a Rent in the Uterus.—Dr. Thomas stated that while he was visiting a patient in the upper part of the city, Dr. Nicoll, assistant surgeon in his department of the Woman's Hospital, came to him in very great haste and told him that he had had a very unfortunate occurrence in his service. He went to the hospital with Dr. Nicoll immediately, and found that the patient, a German woman, the mother of three or four children, who had ordinarily been in very good health, had entered the hospital a week before, on account of prolonged hæmorrhage from the uterus, from which she was very pale and so weak that she could scarcely move about the ward. She said that, about six or seven weeks before, she had a miscarriage and that the placenta could not be got away afterward. He had reason to think, though he was not positive, that there had been criminal abortion. A physician had been called in to remove the placenta, which he tried to do with instruments, but failed in the attempt. She then came to the hospital. After merely taking her history, he directed Dr. Nicoll to dilate the cervix (which was firmly closed) with tents, and to remove the placenta. Dr. Nicoll introduced one or two sea-tangle tents, and the next day proceeded to empty the uterus. Before passing in the tents he had passed the smallest of the ordinary Sims's probes, and was surprised that it passed up four inches beyond the os externum. The house surgeon likewise noticed that fact. They supposed, therefore, that the pregnancy had been more advanced than the patient had stated, and that the uterus now contained a large placenta. After dilatation with tents Dr. Nicoll passed up a wire curette and removed a portion of placenta, quite a large piece. He then put his finger into the uterus and found some more. He passed up the forceps gently, took hold of the placenta, and, turning it, slowly drew it out. After he had drawn it out into the vagina he found that he was still drawing more out, until, to his surprise and horror, he found that he had a foot or more of intestine, with omentum, out between the woman's thighs. He very naturally thought that he had committed some grave error—that he had passed either the tents, the curette, or the forceps through the uterine wall, and that through the opening thus formed the intestine had been drawn down. The case seemed at first a very mysterious one, and when he, Dr. Thomas, saw the patient, although he could not believe that either of these accidents had happened, yet he could think of no other plausible explanation of the occurrence. He found the patient anæsthetized, with a tampon in the vagina. Upon removing the latter, out rolled a large mass of intestines and omentum, and the case presented rather a ghastly appearance. The patient looked as if she would go into collapse at any moment. He introduced his hand into the vagina at once, and tried to pass the intestine back through the uterus, but could not succeed in any degree. He then had the patient placed in position for laparotomy, cut through the abdominal wall, and found that the prolapse had occurred through the anterior wall of the uterus. He pulled the intestine back through the uterus, without any effort whatever, and then saw the explanation of so curious a case. The wound through the wall of the uterus was evidently an old one, and sufficiently large to admit his thumb with ease. It was altogether likely it had been produced by the passage of some large instrument into and through the uterus, and perhaps had become enlarged by some inflammatory action which afterward took place. A part of the intestine was so dark-colored (almost black) that he hesitated to return it, doubting whether a part of it should not be removed and an artificial anus made. The color, however, was due principally to stasis of blood, and, as there were already so many bad features connected with the case, the intestine was simply returned into the abdominal cavity, the wound in the uterus, the edges of which were covered over by a plastic exudation, was sewed up, and likewise the opening in the abdominal parietes. Symptoms of peritonitis developed in twenty-four hours, and the patient died. The fact that there was a plastic exudation thrown out on the wound in the uterus, together with the blackened condition of the intestine, showed that the protrusion must have existed for some time, probably from the time of the criminal abortion, a month or six weeks before. The seizing of the intestine and pulling it down along with the placenta, by Dr. Nicoll, was what anybody else would have done under the circumstances. ═══ Dr. Mundé said he had received a communication from Dr. Baldwin, of Ohio, giving the history of a case somewhat similar. A woman, who had borne several children, again became pregnant, and at about the third month had an irregular practitioner attempt to bring about abortion. About a week afterward she suddenly went into a state of collapse and soon died. Dr. Baldwin and some other physicians saw her. A post-mortem examination was made, and the uterus was found to be of the size which it would present at the third month of pregnancy; it contained some macerated fetal bones, not covered with skin. There was a hole through one side of it, near which, under the broad ligament, were also macerated fetal bones, and a small cavity filled with grumous-like blood. The question was asked whether the hole in the side of the uterus had been caused by the abortionist, and the sudden collapse by sudden hæmorrhage; or whether there had been a tubal pregnancy, with bursting of the sac as the cause of the hæmorrhage and collapse. The history given was not complete, and was somewhat contradictory. ═══ Dr. Thomas said that a remarkable case was reported some years ago by Dr. Douglas, of Dublin. A woman while in labor had rupture of the uterus, but the child was seized and delivered through the vagina. The woman began to improve immediately after delivery, and presented only one peculiar symptom, namely, that she passed her fæces through the vagina by way of the uterus. Another curious fact connected with the case was, that subsequently the fæces were passed the normal way. With regard to the case which he had related, had it occurred to a physician in private practice, in a wealthy family, it might have injured his reputation greatly, as it was probable the accident would have been wholly attributed to malpractice on his part. ═══ Dr. Noeggerath thought the history of Dr. Thomas's case pointed clearly to perforation of the uterus by the abortionist, and that in all the cases of perforation of the uterus on record an attempt at abortion had been found to have been made, during which, it was altogether probable, perforation had taken place. The uterus had often been perforated by physicians when passing the sound, and they were ignorant of the accident; and he referred to an instance where a friend of his always passed the sound four inches up into the uterus in a certain case, while he, Dr. Noeggerath, could make out the depth of the uterus only two inches and a half. At the post-mortem examination (the occasion of which was not due to the manipulation) it was discovered that his friend, each time he passed the sound, punctured the uterus, there being little cicatrices at the points of puncture. No peritonitis, however, had followed the accident. The latest case of the kind on record was carefully described by Dr. Croom, of Edinburgh. He passed the sound three or four inches into the uterus several times in the presence of students, without doing any harm, and it was found that the depth of the uterus was only two inches and a half. He then demonstrated by examination through the rectum and bladder that the sound had not passed through the

Fallopian tube, but through the fundus into the abdominal cavity. There was a case on record in which a wooden peg, at least as large as one's finger, had passed through the uterus and had remained in the abdomen, without producing much trouble. These facts were evidence that the abortionist might have made so large an opening through the walls of the uterus as to allow of the exit of the intestine, and yet not cause serious effects at the time. ═══ Dr. Gillette was reminded of the case of a paraplegic woman on whom he and other *internes* in Charity Hospital, some years ago, repeatedly passed the sound into the uterus from five to eight inches. This was done before students. The point of the instrument could be felt distinctly through the abdominal wall after its passage. It passed so easily that they did not fear any danger from it. The woman was kept in the hospital for some time, as it was expected, from her progressive paraplegic condition, that a post-mortem examination would reveal the true condition of things, but she was finally taken to another hospital and passed from under their observation. These cases, therefore, went to prove that the tissues of the uterus were very soft in some cases and liable to be perforated in the use of instruments; and he thought it might constitute an objection to the use of the catheter in bringing about abortion. It was safer to dilate the cervix with a tent and thus excite the uterus to reflex contraction, simulating as nearly as possible natural labor. ═══ In speaking of practical inferences suggested by the discussion, Dr. Noeggerath said he thought gynæcologists should be warned not to pass any instrument into the uterus without antiseptic precautions. He thought that the induction of abortion by the introduction of the catheter or other instruments into the uterus and leaving them there was a dangerous procedure. He always dilated the cervix and the lower part of the body of the uterus, thus separating the decidua from its attachments and causing a hæmorrhage, and plugged the vagina. There was little or no danger of septic poisoning from such a method, whereas a great deal of danger attended the introduction of instruments into the cavity of the uterus and their sojourn there.

NEW YORK CLINICAL SOCIETY.

A regular meeting was held November 26, 1880, Dr. E. T. Ely Chairman for the evening.

Wolfe's Operation for Symblepharon.—Dr. Ely presented a patient upon whom an operation had been performed which demonstrated the possibility of transplantation of a flap of skin without a pedicle. The patient, a man, had been injured by a gunpowder explosion, and, when recovery took place, the lower lids adhered to the globes of the eyes. The right eye was destroyed, while in the left eye the whole pupil was obscured by the attachment of the lower lid to the cornea. In the operation, known as Wolfe's, the conjunctival cul-de-sac was obliterated, the lower lid was dissected away from the globe of the eye, uncovering the cornea and much of the globe. A flap of skin, three quarters of inch by an inch in size, was taken from the arm, carefully freed from all subcutaneous fat and areolar tissue, and placed on the inner surface of the lid, being stitched to it at its free margin. There being nothing to which the opposite edge of the flap of skin could be stitched, it was simply tucked well down into the cul-de-sac between the globe and the lid. The operation was successful in so far as firm union of the flap to the lid was concerned, none of it sloughing, but the granulations, which formed under the flap during the process of healing, crowded the unattached margin of the flap upward so that the cornea was again partially covered. The patient was now able to count figures, whereas previously he had only perception of light when the pupil was dilated with atropine.

SKIN GRAFTING IN AURAL PRACTICE.—Dr. ELY also gave an account of skin grafting, as done by himself, in cases of chronic suppuration of the middle ear. He thought he could claim priority in the matter, his first operation having been done in June, 1878. Von Berthold, of Germany, had reported two successful cases of closure of perforation of the membrana tympani by skin grafts, but his first operation was done in August, 1878. Dr. Ely had resorted to this method of treatment in eight cases of chronic suppuration of the middle ear, and, though success had not generally attended it, he had satisfied himself that it might prove useful. In five cases a rim only of the drumhead was present, and the walls of the cavity presented a thickened and granulating mucous membrane. These cases were selected because also the amount of purulent discharge was moderate. Minute grafts were taken from the forearm. In the first case the grafts became attached, and remained so for ten days, when, as a result of exposure to cold, the purulent discharge was greatly increased, and the grafts, losing their vitality, came away. In the second case one of four grafts became fixed to the wall of the cavity, and by its growth the granulating surface was reduced one half, the result being permanent. In two cases the result was favorable temporarily only, many of the grafts becoming lost. One case was now under observation, twenty days having elapsed since the operation. Four grafts were implanted on the walls of the middle ear, and there were now to be seen four whitish films, which were enlarging. In three cases attempts were made to close perforations of the drum. The edges of the openings were freshened, and carefully prepared grafts were placed over them. In two instances these were lost, while in the third case, at the last observation, eight days after the operation, the graft was in position. The dressing had been borated cotton applied against the drum, and removed as soon as any discoloration was apparent. ═══ Dr. WEIR thought that dressing antiseptically might improve the chance of success, and suggested salicylated cotton instead of borated cotton, the latter being too irritating. ═══ Dr. ELY remarked that mucous grafts had been successful about the eye, but would be very difficult of application in the ear.

TRAUMATIC FACIAL PARALYSIS.—Dr. ABBE described a case of complete facial paralysis, of traumatic origin. The patient, a girl of nineteen, fell asleep in a chair, in such a position that the back of the chair made pressure in front of the mastoid process. When she awoke there was complete paralysis of the muscles of the face on that side. Five days later treatment was begun, and five drops of tincture of nux vomica were given three times a day. After a few days slight twitching of the muscles of the eyelid was produced. The faradaic current, alone and after the use of the galvanic current, was productive of much benefit. Better reaction attended the employment of the faradaic after the galvanic current. ═══ Dr. NORRIS said that he once had under his care a case of facial paralysis in a child, two years and a half old, due to the action of cold while the child was riding in a car by an open window. It had existed six weeks before treatment was begun, and there was much deformity (retraction). No benefit was derived from the use of either the faradaic or the galvanic current. Contractions were produced by the latter, but none by the former. Radcliffe's "positive charge" was employed without relief. Other treatment was used, but at the end of two months the patient passed from notice unimproved.

PLEURITIC EFFUSION.—Dr. KATZENBACH mentioned an instance of rapid absorption of a large pleuritic effusion after removal of a moderate amount by aspiration. The patient, a medical student, small of stature, was first seen November 4th. The pulse was 128, the respiration 26, and the temperature 101·2° F. The history was that of pain in the left side (pectoral region) for one week. Examination showed the left pleural cavity to contain fluid, which extended up posteriorly to a point a little above the angle of the scapula. From this time until November 10th the symptoms remained about the same, but on the latter date the fluid reached to the second rib anteriorly, and to the spine of the scapula posteriorly. Pulse 102, resp. 30, temp. 99·8°. The apex beat of the heart was in the right fifth intercostal space, near the nipple line. The right half of the chest measured 15¼ and the left 16¾ inches. On November 13th the pulse was 106, the respiration 30, and the temperature 101°. There was complete absence of resonance on the left side. Thoracentesis was performed, and eighty ounces of highly albuminous fluid were removed. In the evening the pulse was 86, the respiration 24, and the temperature 101·2°. It was evident from the physical signs that but a relatively small quantity of the fluid had been removed. On November 18th, the left side, at the level of the nipple, measured 15 inches, while the right measured 15½ inches. A clear percussion note could be obtained down to the eighth rib behind, and to the fourth in front. On the 23d, the pulse was 94, the respiration 24, and the temperature less than 100°, the appetite and sleep were natural. An expansion of the left side of the chest to the extent of an inch and a half was obtained on forced inspiration. A friction sound was to be heard over the whole of the left side, indicating, with the other signs, the entire absorption of the fluid. There had been also a rapid gain of strength. The speedy absorption of so much fluid after the abstraction of a small amount by aspiration was due to the removal of pressure from the lymphatics of the pleura. Such prompt absorption was the more remarkable when it was remembered that the cavity had been lined to a considerable extent by lymph exudation. ═══ Dr. EMERSON thought that the same theory explained absorption of fluid from the abdominal cavity after partial removal by tapping. ═══ Dr. ELY instanced the removal of the aqueous humor in hypopyon, which was often followed by a prompt disappearance of the pus. ═══ Dr. WINTERS thought that leaving a considerable amount of fluid in the chest when aspiration was practiced was recognized as an efficient way of obtaining a prompt and entire cure of pleuritic effusion.

OBSCURE CEREBRAL DISEASE IN AN INFANT.—Dr. NORRIS related the history of a child's illness as follows: When first seen, the child (a girl, ten months old) was lying with her head on the mother's left shoulder, the legs crossed, the left sterno-cleido-mastoid muscle contracted, the head and both eyes drawn toward the right. The pulse was 120; the temperature normal. The child objected to being moved, seeming more comfortable in the posture described, and would not lie in bed. There had been diarrhœa for four weeks. The treatment was: stimulation, general attention to the nutrition, measures to check the diarrhœa, and blisters over the mastoid processes. Within two or three days the diarrhœa stopped, but the other symptoms remained as before. The fontanelles were normal; pulse rapid and irregular; no elevation of temperature. About five days after the first visit, paresis of the left side was observed, the muscles responding sluggishly upon irritation. At this time the child was taking bromide of potassium and iodide of potassium, two grains each, every third hour, together with stimulants, and was nursing pretty well. In twenty-four hours the paresis increased, and the child became hemiplegic on the left side, and slept a good deal. The left pupil was dilated, and a small ulcer was forming at the lower and inner margin of the left cornea, perhaps from incomplete closure of the eye. Coma and death followed within twenty-four hours. During the latter part of the illness there was continuous fever, the pulse being 160, irregular and intermittent; and the temperature 102° F. The pulse was rapid from the beginning whenever the patient was seen. ═══ Dr. PEABODY suggested cerebral tumor, probably tubercle, as the cause of the illness. ═══ Dr. WINTERS agreed with Dr. Peabody's views. He had recently attended a somewhat similar case, in which, however, there were more thoracic and fewer abdominal symptoms. An autopsy revealed tubercular meningitis and acute general bronchitis. ═══ Dr. NORRIS remarked that the history of the case corresponded with the description of spurious hydrocephalus, as given by Dr. J. Lewis Smith, in which some fluid was found in the lateral ventricles and at the base of the brain.

PLACENTA PRÆVIA.—Dr. PARTRIDGE related the history of a case of placenta prævia. The patient had been married eight years when her first child was born, August 30, 1879. She had never been treated for uterine disease. Soon after the birth of this child she applied for relief of uterine symptoms. Examination showed the external os just without the vulva. The cervix was two and a half inches in length, the uterine body being normal. Her perinæum was perfect, the labor having been easy and the child small. The projection of the cervix was due to extreme length, with relaxation of the vaginal walls. A ring pessary gave complete relief. Although nursing her child, she menstruated in November, and again from the 13th to the 17th of December, from which latter time her pregnancy dated. She presented no symptoms of pregnancy at first, and when she was six weeks advanced, with no knowledge of her condition, the uterine sound was passed to the depth of four inches. No attempt at miscarriage followed. Until July 10th pregnancy advanced normally. On that date a sharp hæmorrhage occurred, filling the vagina with clots. During the next week two similar hæmorrhages took place. From July 17th to the 23d daily hæmorrhages occurred (some of them very severe), and during this time the pulse ranged between 90 and 120. On the 17th Dr. Foster saw the patient, and confirmed the diagnosis of placenta lateralis, the structure of the placenta being very readily felt. At 4 P. M., July 23d, a severe hæmorrhage occurred, and between that hour and 7 in the evening about six ounces of blood were lost. The pulse was 120. Delay seemed dangerous. At 7.20 the middle-sized Barnes's dilator was introduced, and after its removal the placenta could be felt anteriorly and to the left, a portion as large as the palms of the fingers being separated from the uterus. The largest dilator was introduced, slight hæmorrhage attending the exchange. Pains occurred at long intervals at first, subsequently with more frequency, but at no time were they efficient. When the largest dilator was removed, the head could be felt to the right posteriorly. Hoping that the uterine contractions would engage the head, the membranes were ruptured, and a small amount of liquor amnii escaped. The head was not forced down, and the hæmorrhage continued; accordingly the forceps was applied. The first blade was introduced without difficulty, care being taken to avoid detachment of the placenta. Considerable difficulty attended the introduction of the second blade, owing to the extreme length of the cervix (3 inches). During its application free hæmorrhage took place. Half an hour was required for delivery, during which there was constant moderate loss of blood. The uterus was so low and the cervix so large that the anterior edge of the external os was in full view. During and after the delivery of the placenta there was no hæmorrhage. The patient was very weak during the operation, the pulse ranging from 120 to 130. Convalescence was slow, but in every respect good. The child, born three weeks before term, did not survive. Viewing the case in the retrospect, it was evident that version would have been better in every respect than the use of the forceps. The child's chance would have been a little better, and the mother would have lost less blood; and yet, at the time when the instrument was applied, the case presented those conditions in which the use of the forceps is generally recommended.

A REGULAR meeting was held January 28, 1881, Dr. J. E. WINTERS Chairman for the evening.

LINGERING ABORTION.—Dr. FOSTER related the case of a woman who applied to him at the out-patient department of the New York Hospital, complaining of uterine hæmorrhage. She was ordered fifteen drops of fluid extract of ergot three times a day, and rest was advised, with hot applications to the upper part of the lumbar spine. In three days she returned, and stated that the hæmorrhage had ceased, but that there was now a thin grayish-white discharge. A careful examination was now made. The patient was thin, pale, and weak-looking, and gave a history of being over-worked. She had had five children, and had never miscarried. Her menstruation had always been irregular, the intervals ranging from five to eight weeks, and the flow was always profuse. She did not accurately remember the date of her last menstruation, but she judged that the hæmorrhage for which she first applied was menstrual, as no unusual length of time had passed without a flow. On examination in the standing posture, the uterus was found to occupy a high situation. There was marked anteflexion, and the cervix was softened. These facts were considered suggestive of pregnancy, but, on abdomino-vaginal palpation (very easily performed in this case), the uterus was found remarkably elongated, reaching to within an inch or two of the umbilicus, and somewhat increased in breadth, but scarcely, if at all, enlarged from before backward. It was considered that no such shape could have been given to the organ by the normal growth of an ovum, and the conclusion was therefore arrived at that pregnancy did not exist. This, however, proved to be erroneous, for within two days a three-months fœtus was expelled. The error was due, Dr. Foster thought, to the fact that the liquor amnii had escaped before the examination was made, thus allowing the uterus to contract upon the fœtus alone, and to assume the unusual form that he had described. He was not aware of any means, short of exploring the uterine cavity (which he did not consider prudent under the circumstances), that would have revealed the presence of a fœtus. ═══ Dr. SMITH thought that a correct diagnosis would be impossible in such a case. ═══ Dr. ABBE suggested, as a possible explanation of the shape of the uterus, that the placenta was attached laterally. He asked whether, practically, the ovaries could be distinguished by abdominal palpation, to which Dr. Foster replied that he had never been able to make out a healthy ovary in that manner.

HYSTERICAL (?) PAIN.—Dr. ABBE described a case which recently presented itself at the out-patient department of the New York Hospital. A well-nourished young woman stated that, one year previous, she received a slight injury to her shoulder, since which time she had a constant, slightly increasing pain and tenderness in that region. Examination showed the head of the humerus normally movable in the glenoid cavity, though there appeared to be a slight prominence over the coracoid process. The pain was referred by the patient to a locality over the sternum, toward the affected side; over the ribs, as low as the seventh; and over the scapula, the clavicle, and the upper part of the humerus. It was not greater at one point than at another. There was tenderness over this region when pressure was made upon any underlying bony surface. Pinching the skin or muscles did not cause special pain. A blister, four inches by one, was applied over the upper three dorsal vertebræ, and three days later she thought there was less pain. Dr. Abbe hardly believed that any fracture had existed, and suggested, as a possible explanation, an inflammation of the ganglion of the posterior root of a spinal nerve. There was no hyperæsthesia or anæsthesia, and no tenderness over the vertebræ. ═══ Dr. Foster thought the cause of the pain must be spinal. ═══ Dr. Winters said there was no nerve distribution to explain the location of the pain. ═══ Dr. Smith would regard the case as largely mental, and thought that a blister applied elsewhere would have produced the same result. ═══ Dr. Foster objected to the use of the expression "mental" when *hysterical* was meant, and asked whether hysteria could produce a given group of symptoms without an intermediate nutritional difficulty in the region affected. ═══ In answer to a question, Dr. Abbe stated that there was a normal electrical response over the region of pain and tenderness.

A regular meeting was held February 25, 1881, Dr. W. H. Katzenbach Chairman for the evening.

Pyæmia Successfully Treated without Medicine.—Dr. Ely presented a patient who had had well-marked pyæmia, and had recovered under expectant treatment. He was a boy of seventeen, who for several years had suffered from chronic suppuration of both middle ears. On January 21st, without appreciable cause, mastoid disease developed on the right side. Operative measures being declined, four leeches were applied. *22d.*—8.30 a. m.: temperature, 104·5° F.; much pain in right side of head, forehead, and temples; general appearance worse. Incision down to the bone did not reveal pus. Under the anterior flap of the wound the bone appeared softened, and, upon cutting into it, half a teaspoonful of pus escaped. At 1 and 7 p. m., temperature 101°. A tent and warm applications were employed. During the five days following, the patient seemed to be recovering rapidly. *27th.*—A chill, followed by a temperature of 104·5°. Discharge from the wound less, but no increased local tenderness. Pain, tenderness, but no redness, were present along the right jugular vein. From this time there occurred wandering pains, with tenderness in the knee joints, the axilla, the inner edge of the biceps, and the clavicles. *29th.*—Discharge fœtid. This was the case for several days. Patient entered upon a low typhoid state, the tongue being at first brown and dry, then red and glazed. There was an ashen pallor of the skin, and several clay-colored stools were passed. Temperature between 101° and 105°. Pulse rapid and weak. Irregular chills and sweats. On the 31st a swelling, which soon reached the size of a walnut, appeared over the left sterno-clavicular joint, with fluctuation. There was constant pain in the frontal region, and in the shoulders and arms. *February 5th.*—Inflammation of glands in the right side of the neck, which was subsequently attended by deep suppuration. *12th.*—The swelling at the sterno-clavicular joint had disappeared, no opening having taken place. The general condition was improving somewhat. An abscess then developed in the alveolar process over the last upper molar, which was opened from without. From February 12th improvement was steadily progressive. The treatment was nourishing, moderately stimulating, and *entirely* without medicine. The points of interest illustrated by the case were: First, that persons afflicted with chronic suppuration of the middle ear were never safe; and, secondly, that recovery from pyæmia might take place without medicinal treatment. The improvement when it began was marked, and, if quinine had been employed, the fall in temperature would have been attributed to it. ═══ Dr. KELSEY had seen but one case of recovery among a large number of cases of pyæmia. The case was typical, and followed lithotomy, abscesses developing in one hip, one shoulder, and both ankles. Quinine was given in large doses, but the recovery was not attributed to its use, for other patients treated in the same way died. In the patient who recovered, the hip-joint trouble became permanent. Quinine he regarded as worse than useless, as it endangered the digestion, which, if anything, would save the patient. ═══ Dr. BANGS had seen sixty- and eighty-grain doses of quinine employed in the German Hospital, without any beneficial results, in pyæmia. ═══ Dr. EMERSON asked what should be the guide for withholding treatment. ═══ Dr. ELY thought there was no known drug which would arrest septic poisoning. His personal belief in this was so strong that, if he had the disease himself, he would prefer to have no medicinal treatment. He thought that an alkaloid, which, in doses of a few grains, would frequently produce unpleasant symptoms, was not always wisely given in doses of twenty, forty, or sixty grains. ═══ Dr. BANGS remarked that life was sometimes endangered in typhoid fever by the employment of quinine

THE ETIOLOGY OF STRICTURE OF THE RECTUM.—Dr. KELSEY raised a question in regard to the etiology of rectal stricture. He had under his care a woman, undoubtedly syphilitic, the initial lesion having occurred two years previous. She had now a squamous eruption and ulceration within the rectum, with a recent stricture. The symptoms pointing to rectal trouble had been present during the last eighteen months. He did not believe the case to be of chancroidal origin, owing to the appearance of the ulceration, and its absence from the lower inch and a half of the rectum. He asked whether secondary syphilitic ulcerations might not be productive of stricture of the rectum. ═══ Dr. BANGS thought that the rectal ulcerations in this case were too recent to have produced contraction and stricture. He had seen chancroidal ulceration high in the rectum, caused by unnatural intercourse. He could hardly believe that secondary syphilitic ulcerations (which were not usually deep) could produce stricture. He thought that rectal ulceration accompanying stricture was often produced by it, owing to functional interference. ═══ Dr. DELAVAN believed that stricture might result from secondary syphilis. ═══ Dr. KELSEY suggested that the order of events might be syphilis, secondary ulcerations, resulting stricture, and then further ulceration due to the stricture.

OBSTINATE HICCOUGH.—Dr. BANGS related the history of a case of obstinate hiccough. The patient was an elderly gentleman, who had been under treatment for enlarged prostate. He was seized with hiccough, which persisted except when he was eating or sleeping. Camphor was the remedy first employed, and it had a slight moderating effect. Belladonna and bromide of potassium had no controlling effect. Musk, when first given, produced relief for two hours. The patient was weak and despondent, and if awake at night would suffer as during the day. Dr. Alonzo Clark, in consultation, had suggested cupping over the origin of the phrenic nerves, but no benefit attended that treatment. Morphia produced no effect. At the end of the eighth day Dr. Hammond was called in consultation. No lesion of the cord was believed to exist, and the trouble was thought to be caused by general disturbance of the nervous system, the patient being an overworked and feeble old man. Bromide of sodium, in fifteen-grain doses, charcoal, pepsin, and valerianate of ammonium were given. During twenty-four hours the patient was awake for three hours only, and when he finally awoke he was refreshed and free from hiccough. Ten years before, he had had an attack, which lasted nine days, and was relieved by fifteen-drop doses of spirit of camphor every fifteen minutes. ═══ Dr. Delavan mentioned the case of a gentlemen of seventy-three years, who had an attack of hiccough which lasted more than three weeks. Medicinal treatment seemed fruitless. His physician, by a peremptory order, could always interrupt the hiccough during his presence. ═══ Dr. Katzenbach had read of a case of nine months' duration, which was relieved only by the passage of an œsophageal probang.

Pain in Laryngeal Ulcers.—Dr. Delavan mentioned two cases of ulceration of the epiglottis. In one the ulcer was of tubercular origin, very small, and the pain in deglutition was very great. In the other case there was no dysphagia, yet three quarters of the epiglottis were gone, and there was ulceration of the vocal cords and other parts of the larynx. He asked why there should be this difference in regard to pain upon deglutition. ═══ Dr. Fox thought that the pain attending syphilitic ulceration in the mouth and elsewhere was in relation to its acuteness. Ordinarily, in syphilis the lesions were chronic in their development and course. ═══ Dr. Smith remarked that tubercular ulceration was also chronic, yet it was very painful.

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Reports on the Progress of Medicine.

QUARTERLY REPORT ON GENERAL MEDICINE.*

No. VI.

By W. H. KATZENBACH, M. D.,
ATTENDING PHYSICIAN FOR DISEASES OF THE CHEST TO THE OUT-DOOR DEPARTMENT OF BELLEVUE HOSPITAL.

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* I am indebted to Dr. George T. Jackson for assistance in the preparation of this report.—W. H. K.

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6. Dr. Smith summarizes his views as to *the relations of tubercle, scrofula, and phthisis* in the following propositions: Miliary tubercle is the only true tubercle; tubercle is probably never primary; scrofula is a frequent predisponent to tubercle; tubercle is not essential to phthisis pulmonalis.

7. M. Rendu, in discussing *scrofula and tuberculosis*, holds that tuberculosis is an acquired and not an hereditary disease, and believes that it is parasitic in its nature, though the parasite has not yet been found. He draws four conclusions. 1. The follicle called "tuberculous" is not a specific element; it occurs in a host of accidental new formations, and, though most frequent in tuberculous products, it should not be considered as having an absolute significance. 2. Scrofula is a true diathesis, characterized by a series of variable manifestations to which it gives a special type, its lesions being peculiarly indolent and torpid. 3. Tuberculosis is not a diathesis; it shows itself after the manner of parasitic diseases, always ready to come to light when the organism is run down. 4. The relation of scrofula to tuberculosis is that of the soil to the seed—scrofula being the soil in which tuberculosis develops readily.

8. M. Constantin Paul draws attention to *a new sign of scrofula*, viz: the appearance of the lobes of the ears after piercing for earrings. In many scrofulous individuals, instead of the usual simple canal, there will be found either a widened channel with thick cushiony borders, or a section of the lobe causing a slit through to the edge, or ugly cicatrices upon the lobe. He regards the presence of these lesions as important in the examination of wet-nurses, and refuses to employ any nurse who has them, on the ground of scrofulous taint. Further, he advises against piercing the ears of girls having evidence of scrofula, for fear of producing these deformities. These lesions may be the first evidence of the strumous diathesis. In support of his theory he reports one hundred and twenty cases, in one hundred and sixteen of which other symptoms of scrofula were present. The morbid process is a species of lupus, a peculiarity of which is that the ulceration is always downward to the rim of the lobe, due probably to the weight of the earring. Proofs of the constitutional origin of the ulceration are shown by its slow course and by the fact that in seventy-nine per cent. of the cases it was bilateral.

9. In the consideration of *gout as a tropho-neurosis*, Dr. Duckworth reviews the special characters of the neuroses in general, and examines as to how far the ascertained features of gout conform to them. "Foremost among the analogies of gout with the other neuroses is the marked hereditary tendency. The sudden supervention of an attack is a noteworthy feature, recalling the outset of such neurotic affections as epilepsy, angina pectoris, asthmatic or neuralgic paroxysms. The time of the occurrence of the attacks, commonly in the early morning, is that at which other neurotic seizures are apt to occur. The pyrexia of gout is paroxysmal, and so is the pain. The paroxysmal and periodic factors in the malady stamp a nervous character upon it, and ally it to the other nervous diseases. Again, gout itself blends with other well-recognized neuroses; thus, hemicrania is sometimes distinctly a manifestation of gout in both sexes, or may alternate with arthritic attacks of true gout in the same individual. Among the strongest evidences in favor of the view that gout depends upon nervous influences are the facts relating to the induction of its attacks. In the majority of instances causes are at work which tend to depress nervous power. Exhaustion of any kind, whether caused

by overwork of mind or body, excitement, rage, worry, is provocative of attacks; indeed, any circumstances or conditions which are of a kind to break in upon the even tenor of life. Dietetic errors, excesses of all kinds, are well-recognized factors. Many of the causes thus enumerated are likewise efficient to produce other neurotic affections, such as epilepsy, asthma, hemicrania, or angina pectoris. Climate also has an influence in affecting the nervous system. Dull and 'shifty' weather, cold east winds, and the negation of solar light and influence, are all bad for gout. A consideration of the mental condition of the goutily disposed throws light upon the nervous pathology of the malady. Intense irritability of temper is proverbial, and an outburst of rage is sometimes a metamorphic substitution for a regular attack of gout. Many cases of temporary glycosuria are due to gouty conditions, and the alliance between these two states is very intimate. In both the gouty and the diabetic, the law of heredity holds good, and the nervous system is involved. The same dietetic habits lead to each; the same classes of persons are affected; and the same exciting causes, such as tend to exhaust and depress the nervous system, will evoke both. The trophical results of gout may be described under two heads: first, according to the transmitted physiognomical characteristics, as the large head, florid complexion, the strong, well-enameled teeth, little prone to decay, the strongly built and muscular frame; and, secondly, with relation to the tissue degeneration characteristic of the malady, as the hair often prematurely gray, marked tendency to tartar incrustation on the teeth, at times enlargement of the nose; the general sclerosed condition of the whole arterial system, in association with both chronic interstitial nephritis and changes in the walls and valves of the heart. Special arthritic changes, with deposits of urates, are present in varying degree. Colchicum belongs to a whole class of agents which powerfully affect the nervous system. It appears to act upon the vaso-motor nerves. The theory that gout is a tropho-neurosis appears to correlate all the known factors concerned in the production of the varied symptoms of the malady. It certainly displaces the humoral pathology of gout from the preeminence it has so long held; but it takes full cognizance of it, and seeks to place it in a clearer relation to the overruling neurosis."

25. Dr. V. Allara believes that *bronchocele* is caused by the introduction into the system, by means of drinking water, of a silicate of an alkaline base. Owing to the power which carbonic acid has of decomposing the silicates of alkaline bases, the administration of an alkaline carbonate in small doses for a long time exercises a beneficial influence upon bronchocele. He also recommends the use of iron, and removal from the unwholesome regions where goître is prevalent, into the woods and a more salubrious territory.

26. Under the name of *cerebral pyrexia* Dr. Green describes a fever which is nearly allied to sunstroke, and is frequently met with at the sea-side, and probably elsewhere, during the heat of summer. It differs from the cerebral fever of Trousseau in its invariable tendency toward recovery after a variable length of time. The cases are divided into two classes: 1. Those of persons who have neither paddled (i. e., walked about in the water with bare feet and legs) nor come in contact with the sea. 2. Those of persons who have done both. As regards symptoms, first there is a period of listlessness and feeling of malaise, failure of appetite, furred tongue, and constipation. This is followed by exhaustion, dull pain in the head, often acute, intolerance of light, flushed face, sluggish, frequently unequal, pupils; pyrexia above 102° F., etc., pulse strong, bounding, and from 100 to 120; cerebral macula well marked. In the next stage the pupils are dilated, the dullness more marked, the patient indifferent to everything. Constipation continues obstinate, with dull pain in the head; no pain elsewhere; no thirst; urine high-colored. The patient is generally drowsy, and sleeps, unless aroused, the greater part of the time. The tongue is thickly coated, moist, and tremulous. The temperature remains almost constantly at from 102° to 104°, with perhaps a tendency to fall a degree toward night. The pulse is soft and slow, from 72 to 84. The skin is generally moist, but in cases likely to continue some time it is, as a rule, dry, with occasional perspiration. During this stage the cerebral macula is very vivid, and occasionally lasts from fifteen to twenty-five minutes. This stage lasts from eight to ten days, and is usually followed by a tendency to diarrhœa without abdominal pains; the temperature falls a degree or so the first day, and to normal on the following day, the pulse becoming small and quick; the patient again becomes bright, and the cerebral macula almost disappears. If resolution does not now take place, the tongue becomes dry in the center, with moist edges, the patient is more lethargic, diarrhœa alternates with constipation, and the disease continues until about the twentieth day, when a slight nose-bleed takes place, which appears to be critical; then the temperature falls, and convalescence slowly progresses. Those cases in which the skin is moist and the drowsiness most complete seem to end more rapidly in recovery. From the analysis of thirteen cases, Dr. Green finds that the disease affects persons of various ages and of both sexes, is not confined to any one class, and occurs as frequently among residents as among visitors. It affects those whose vital energies are exhausted from any cause. In the way of treatment, nothing seemed to shorten the disease. Salicine appeared to do good during the period of headache, but quinine proved most serviceable when this had passed off. Cold sponging and bathing appeared to reduce the temperature and to shorten the attack better than any other measures. In slight cases the patients were quite well after a good dose of bromide of potassium, a cool bath, and a good night. The author devotes the rest of his paper to the differential diagnosis of cerebral pyrexia and typhoid fever.

35. Dr. Schmitz believes that an important factor in the *pathogeny of diabetes* is the failure on the part of the pancreatic juice to digest the sugar ingested in the upper part of the intestinal tract, the failure being due either to disease of the pancreas in which too little juice is secreted, or to a relative insufficiency of the pancreatic juice to the amount of sugar ingested. In support of this theory he instances the frequent occurrence of gastro-intestinal disturbance in diabetes, and cites cases where, in diabetes, violent symptoms of gastric and intestinal disturbance presented after the patients had taken considerable amounts of sugar. These remarks refer only to that form of diabetes in which the ingested sugar does not undergo the normal changes, but accumulates in the blood.

39. Dr. Morgan, during the last eight years, has had seven cases of *idiopathic lateral sclerosis* under his care; six were in men, and one in a woman. All the patients were in the prime of life, between twenty-five and fifty years of age. Three cases are related; in two the earliest symptoms seem to have followed exposure to long-continued extreme cold, in the other there were strong grounds for believing that the disease was hereditary. All the patients spoke of their disorders as having come on gradually and insidiously. One of the cases terminated fatally. Sections of the spinal cord, examined by Dr. Dreschfeld, showed sclerosed patches in the lateral columns, well marked in the dorsal region, but less distinct in the cervical and lumbar regions. In the lumbar region the sclerotic portion formed a small triangular patch, close to the outer side of the posterior horns, extending almost up to the outer border of the lateral columns posteriorly, but extending but little anteriorly. The other parts of the spinal cord were perfectly healthy. After describing the symptoms of the disease, Dr. Morgan concludes his paper thus: "Assuming that the posterior divisions of the lateral columns are the portions of the spinal cord more especially involved in idiopathic lateral sclerosis, have recent physiological researches thrown any light upon the functions of these regions of the spine which would assist us in explaining such symptoms as those I have endeavored to describe in this paper? Experiments performed on rabbits by Miescher seem to show that certain afferent influences, in passing up the cord, travel almost exclusively along the lateral columns. Miescher's experiments have been repeated and confirmed by Woroschiloff, who has arrived at the conclusion that both afferent impulses, which originate reflex action, and efferent impulses, which produce movements, pass almost exclusively along the lateral columns, which form (according to these authorities) the chief channels for the conduction of impulses of all kinds. We can readily believe that, if these channels be invaded by a chronic inflammatory process, such as occurs in sclerosis, the centrifugal nerves will be more or less affected, and paralysis and tension are likely to supervene. We can further understand that a lesion occupying the same region of the spine would prove a source of irritation to the centripetal nerves in their passage upward. In this manner the increased reflex movements we observe in percussing over the tendons of certain muscles may be partially explained. But the investigations of Woroschiloff do not rest here. They go to prove that not only do afferent impulses travel along the lateral columns, but that here also (in part at least) lie the tracts which control reflex movements. If this be true, the sclerotic change may, by destroying these tracts, cut off the inhibitory influence exercised by the brain on the reflex arcs of the spine, releasing these centers from the salutary control to which they are normally subjected, and leaving the muscles a prey to every passing stimulus."

41. Last year Dr. Buzzard reported four cases of *locomotor ataxia with osseous and articular lesions.* Two of the patients (female) suffered also from most characteristic attacks of the *crises gastriques* of Charcot; attacks in which there is pain in the stomach and chest, with spontaneous retching and vomiting, occurring at irregular intervals, and leaving the patient free from gastric derangement between the seizures. Since then four more cases of tabetic arthropathy have come under his observation, and in three there was again the association of typical gastric crises with affection of the joints or bones. These are reported in detail. After other comments upon them, Dr. Buzzard says: "I suggest that the frequency of the coincidence of gastric crises with the osseous lesions gives reasonable ground for the hypothesis that the latter may depend upon an invasion of a part of the medulla oblongata closely adjacent to the roots of the vagi. It is only as a working hypothesis that I make the suggestion. Is there something which we may call provisionally a trophic center for the osseous and articulatory system in the immediate neighborhood of the roots of the vagi? As I have suggested on a previous occasion, the discovery of such a center would materially help us to explain the remarkable association of cardiac complications with the joint affection of acute rheumatism, as well as the sweating characteristic of this disease, and the occasional hyperpyrexia which occurs in it. And it might also help to throw light upon the obscure pathology of arthritis deformans.

43. MM. Roger and Damaschino, as the result of their study of *the alterations of the spinal cord in the spinal paralysis of children and in progressive muscular atrophy,* conclude that: 1. The characteristic alteration of infantile paralysis is a lesion of the spinal cord of which atrophy of the nerves and muscles is the consequence. 2. The lesion is most particularly seated in the anterior portion of the gray substance, where it shows itself under the form of centers of softening. 3. The softening is of inflammatory nature, and the disease is a myelitis. 4. Infantile paralysis should be called spinal paralysis of children, and its place nosologically is in the affections of the spinal cord, among the myelites. 5. As to progressive muscular atrophy, it differs from infantile paralysis both as to its symptoms and as to its anatomical lesions; in it the spinal alteration consists essentially in the atrophy of the motor cells without any center of inflammatory softening. [This is an exhaustive study, and to be commended to those interested in the subject.]

48. M. Koch reports the occurrence of *paralysis of the larynx in a child,* two years of age, which began as a simple laryngitis (catarrh), the cough of which disappeared completely in a short time. Hoarseness, however, remained during a month, and then increased to complete aphonia. After three months dyspnœa became so great that tracheotomy had to be performed. The examination of the throat externally furnished only a negative result. The finger introduced into the mouth proved that the epiglottis and arytenoid cartilages were intact. The laryngoscope showed that no tumor was present, and that the vocal cords occupied a fixed position corresponding to that of phonation. The dyspnœa was exclusively inspiratory, intense, and wheezing, attaining its maximum during sleep; expiration was free; the cough was croupy. After the operation the trachea was found normal. The writer believes the case to have been of myopathic origin, due to a gradual œdematous infiltration of the posterior crico-arytenoid muscles, and says that it would be easy to confound this affection with true croup, and, the pharynx being intact, of the ascending variety. He believes the affection to be more frequent than is usually supposed.

49. Concerning *the pathology of writers' cramp*, Dr. Fraser contends that "the affection is peripheral in origin, and of the nature of irritation of the terminal fibers of sensory nerves, secondary and central changes being inevitable in the course of time." Three cases are given in illustration of this view.

55. M. Barety, in his article on *stridulous laryngitis, or false croup, considered as one of the symptoms of acute engorgement of the tracheo-bronchial glands*, says that he has never seen a case of stridulous laryngitis without acute or subacute engorgement of the tracheo-bronchial glands, and believes the dyspnœa to be due to pressure upon the recurrent laryngeal nerves, and consequent spasm of the glottis, these glands being in close relation with the nerves in the thorax and along the trachea. It occurs in children from one to nine years of age, of lymphatic temperament, born of lymphatic, scrofulous, or tuberculous parents. He thinks that after the age of nine years the size of the glottis protects from these attacks. As prophylaxis he recommends an anti-strumous treatment.

61. In this paper Dr. Morgan first directs attention to the spirometer in the treatment of all cases accompanied by *pleuritic effusion.* Percussion, auscultation, and palpation will not inform us accurately of the amount of fluid present from time to time in the chest. When the costal and pulmonary pleuræ are held together by old adhesions, and the pleuritic effusion is encapsulated, a comparatively small amount of fluid is sufficient to cause absolute dullness on percussion and a total absence of the vocal fremitus, even though the portion of lung actually compressed be altogether insignificant. If we would measure the extent to which the lung is encroached upon, we may obtain accurate and valuable information by means of the spirometer. There is no disease in which a diminution in the vital capacity is so rapidly induced as in pleurisy with effusion. We can measure such changes with facility by Dr. Jagielski's spirometer. It teaches us whether it is necessary to perform paracentesis, and when the operation should be performed. The instrument should not be used in the early stage of the disease, when the stitch in the side is troublesome. Dr. Morgan thinks the insertion of the hypodermic needle into the chest, for the sake of satisfying ourselves as to the nature of the effused fluid, is not altogether free from risk, and may be the cause of the conversion of a serous into a purulent effusion. He performs paracentesis in purulent effusion in the anterior portion of the chest; in serous effusion, directly in the axillary line, just above the sixth rib. He prefers Bowditch's syringe to the aspirators generally employed; and seldom, unless the symptoms of oppression and dyspnœa are very marked, withdraws more than from twenty to thirty ounces of serum at one sitting. The removal of this quantity is often sufficient to stimulate absorption. Reëxpansion of the lung may be brought about by the inhalation of compressed air. Paracentesis is repeated at stated intervals until all of the fluid is withdrawn. If we have determined that the effusion is *purulent*, no time should be wasted in attempts to get rid of it by either the aspirator or the syringe. A free incision, about an inch and a half in length, should be made in the fifth or sixth intercostal space, as near the mammary line as possible, and a cannula inserted, with a view of keeping the wound open, the cannula being covered with tow steeped in carbolic acid. The patient should be directed to lie on his side for about forty-eight hours to allow of the escape of pus, and then a silver catheter may be substituted for the cannula. The remainder of the purulent effusion should be removed by an exhausting syringe attached to the catheter. After completely removing the pus, the interior of the chest can be sprayed through the catheter by a Lister spray-producer. Tincture of iodine, half a drachm to the ounce of water, or a solution of permanganate of potassium, may be used for cleansing the cavity—the latter if the discharge is offensive. The temperature should be taken twice a day, or oftener, during the whole treatment. If the lungs generally are healthy, and there is no tuberculous disease, a rise of two or three degrees will almost certainly indicate that pus is collecting in some portion of the pleural sac, and is poisoning the system. If the pus is fetid, the rise of temperature will probably amount to four or five degrees. Under these circumstances the silver catheter will be found peculiarly valuable; for, to bring down the temperature, adhesions must be broken up, and the imprisoned pus liberated. Two typical cases are referred to in illustration of the foregoing remarks.

62. M. Tenneson reports a case of *sudden death after thoracentesis.* The amount of fluid drawn off was a little over one quart, and it was accomplished in two operations, separated by a period of repose. No dyspnœa or syncope was experienced by the patient at the time of the operations, not even a cough, but nine hours afterward, in spite of all precautions being observed, the patient died suddenly in an attack of syncope. The autopsy showed the lungs to be emphysematous, that there was interstitial pneumonia in the superior lobe of the left lung, and that the heart was dilated. Tenneson considers thoracentesis dangerous in cases in which disease of the lungs or heart exists previous to the attack of pleurisy.

73. M. Sée gives the following points for the *diagnosis of cancer of the lung:* 1. A very great amount of dyspnœa, which is permanent. 2. Expectoration of the character of bloody pea-soup. 3. A great amount of pain. 4. Physical signs: (*a*) Dullness, which has no point of election, develops over the new growth, grows with it, and occupies but one side of the thorax; (*b*) The vesicular murmur is absent; (*c*) Vocal fremitus is wanting; (*d*) A slight displacement of the neighboring organs. If the cancer is what he calls "compressive," we may have slight œdema, dysphagia, and a difference between the radial pulses, if it should press on the subclavian artery. From phthisis it is diagnosticated by the seat of the lesion and by the character of the expectoration; from chronic pneumonia, by the dyspnœa being greater, by the character of the sputa, by the dullness being limited, and by the absence of *souffle* and fremitus; from pleurisy, by the character of the sputa and by the absence of *souffle* and fremitus. The compressive form of cancer is diagnosticated from bronchial adenopathy by the phenomena to which it gives rise not being so intense as in the latter; from aneurism of the aorta, principally by the absence of aortic *bruit* and pulsation.

76. The following is an abstract of Dr. Balfour's paper on *paroxysmal angina pectoris.* The pathology of angina pectoris as a neuralgia is in accordance with the view that death in these cases is not usually instantaneous, as would be the result of a suddenly fatal spasm of the heart, but commonly occurs from a gradual sinking of the aortic pressure, and this the result of an equally gradual diminution of the heart's force. We know that any sudden or violent pain produces sickness, faintness, and depression of the heart's action; and we also know that whatever produces depression of function in the fibers coming from the posterior root of a spinal nerve, and as its result pain or neuralgia, produces also depression of function of the motor fibers coming from the anterior root of the same nerve, and as its result sub-paralysis of the parts to which they are distributed. Hence we have in angina pectoris two distinct sources of depression of the cardiac action: first, the directly depressing influence of a pain the most acute and severe which the human frame can experience; and, secondly, the action on the cardiac motor ganglia of the same cause which, acting on the sensitive nerves, gives rise to this excruciating agony; and the functional depression of the motor nerves is not much less than that of the sensitive ones—that is, the sub-paralysis of motion must bear some proportionate relation to the acuteness of the pain, which is the index of the functional depression of the nerves of sensation. But there must be some exceptions to this rule; even in strictly spinal nerves the pain is often very much greater than the sub-paralysis, and there are many cases of angina in which the pain recurs at intervals for years, in a most excruciating form, without producing a fatal result. A depressing cause may at one time act with greater intensity on the sensitive fibers, at another on the motor fibers, and at still another upon both alike. Angina is sometimes feigned, and is occasionally of a purely hysterical character. Pain in the heart, however caused, is, if not angina, at least very closely allied to it. The infra-mammary pain of chlorotic girls is associated almost invariably with pain in the heart itself, neurotic in character, and depending on malnutrition. So, also, in all other forms of spanæmia. The tobacco heart is simply a spanæmic heart, weak, irritable, and somewhat dilated, with an auricular murmur and an accentuated pulmonary sound. In all spanæmic cases the pain or uneasiness is persistent, with occasional exacerbations following exertion, a distended stomach, or some other exciting cause; and it is rapidly cured by improving the general health, the first step toward which is, of course, the giving up of whatever has deteriorated the health, whether that be excess in tobacco, tea, whisky, work, or anything else. The diet, nature, and hours of work and rest must be regulated. Along with general remedies, it is often advantageous in such cases to apply sedatives locally to the cutaneous nerves, by a belladonna plaster to the painful part, or by rubbing the side and shoulder with an opiate liniment. The sequence of events in ordinary cases of angina seems to be, first of all, imperfect nutrition of the cardiac muscle, associated with various uneasy or painful sensations, and generally, if not always, accompanied by the early physical signs of dilatation, usually with some hypertrophy. Next, the paroxysmal attacks of pain occur when the heart is called upon for unusual exertion, especially when a weak pneumogastric nerve is irritated by a distended stomach. At first these attacks occur only when the patient is debilitated from any cause, and his cardiac power thus temporarily impaired; in these circumstances improvement in health is followed by cessation of the angina, temporarily or permanently. By and by, as the nutrition of the heart becomes more impaired, the attacks are more readily brought on, the paroxysms are more severe, and death occurs from asystole or rupture, sometimes during an attack, more often, perhaps, during a painless interval. In traumatic angina, the individual, in apparently perfect health, meets with some trifling accident, and is plunged into a series of recurrent paroxysms which soon terminate in death. Nitrite of amyl is foremost as a remedy for the relief of this dreadful breast pang; it is perfectly safe, and may be entrusted to the patient. It relieves the pain of angina not from lowering of the blood-pressure, but from the action of a volatile narcotic, which gradually escapes from the amyl when kept, unless it is enclosed in hermetically-sealed glass capsules. The amyl fails to relieve the attack if it is a severe one. Then our only resource lies in chloroform, which ought to be given freely, so as to completely narcotize the patient, and should always, if possible, be administered by a physician. This always relieves, but frequently the relief is not permanent enough to place the patient in safety. In these cases the subcutaneous injection of bimeconate of morphia is of benefit. In aortic regurgitation, chloroform regulates the circulation and is of great benefit. *Fatty heart* is difficult to diagnosticate. It is the result of malnutrition, and is always found with a long-persistent spanæmic condition of the blood, or general anæmia, or a cardiac anæmia from local causes, such as atherosed and obstructed coronary arteries, or the heart-muscle hypertrophied beyond the feeding power of these vessels. In the interval of the paroxysms of angina the general health must be looked after, excitement avoided, and perfect rest in a mild, equable climate enjoined. The two remedies to improve the heart are arsenic and digitalis. In all forms of weak heart, accompanied by pain, arsenic is indispensable, and, in from three- to five-minim doses, twice a day, after food, is quite successful in putting a stop to angina permanently. Opium added prevents it from irritating the bowels. One granule of digitaline, night and morning, with arsenic, strychnine, and iron, is a sort of model treatment for such cases.

82. In this article on *tuberculosis of the stomach*, M. Cazin says that it is an exceedingly rare disease in children, and even more so in adults. His remarks bear chiefly upon the ulcerative stage. These ulcers are usually found on the greater curvature, and generally in conjunction with ulcerative or other tubercular change somewhere else in the intestinal tract. It is noticeable that in the cases occurring in children, when death takes place from hæmatemesis, the lung affection is not much advanced. It appears from cases cited in this article that mere tubercular disease of the stomach, without ulceration, does not play so important a *rôle* in the progress of the case as the same affection of the intestines, but if ulceration sets in with hæmatemesis, accompanied by bloody stools, death follows in a few days. The author reports a unique case from his own practice, in which an ulcer was found in the lesser curvature and at the cardiac end of the stomach, tubercles being scattered generally all over the lesser curvature, while neither ulcerations nor tubercles were found in the rest of the intestinal tract. Death took place by hæmatemesis. Giant cells were found in the tubercles.

91. The following are Dr. Waller's conclusions, from an examination of forty-five cases, of *the cardiac and vascular changes in interstitial nephritis*: 1. Certain changes in the vascular system are found in connection with chronic interstitial Bright's disease. 2. These changes consist principally in thickening of the middle and inner coats. 3. In the case of the systemic arteries, the outer coat does not undergo any change which can be connected with the state of the kidneys, though in the kidneys themselves it is sometimes secondarily blended with the surrounding increased circumvascular connective tissue. 4. The hypertrophy of the heart is compensatory, and secondary to obstructive causes. It seems to bear a definite relation to the degree of obliterative thickening in the tunica intima of the systemic arterioles. There will, however, be no hypertrophy if the general nutritive conditions of the system are markedly bad. 5. The changes in the arterial coats are, in all likelihood, due to the same primary cause as the alterations in the kidney stroma—namely, the circulation of poisoned blood; though the affection of the vessels is generally subsequent in point of time, owing to the more differentiated, and therefore more stable, nature of the vascular tissues, and the non-occurrence of cell emigration into the arterial tunics as into the kidney stroma. 6. Interstitial changes may occur in the kidney, apart from any alterations in the arteries, if the renal disease prove fatal before the latter have time to develop. This is seen in cases of glomerulo-nephritis, in which death generally occurs rapidly, with symptoms of suppression of urine, uræmia, and acute dropsy. 7. The general order of sequence of the various items in the morbid process appears to be: (*a*) blood poisoning, (*b*) renal changes, (*c*) vascular changes, (*d*) cardiac hypertrophy.

95. *Hæmatogenous albuminuria*, according to Bamberger, is that condition of the urine in which a slight amount of albumen is found, without any lesion in the kidney. It may occur in persons practically sound, as well as in those who are sick; it occurs in febrile conditions, in heart and lung diseases, and in convulsive attacks, such as epilepsy, strychnia poisoning, etc. Albumen appears in the urine when the epithelium of the glomeruli of the kidney is diseased, or when there is alteration in the blood pressure; further, the albumen of the blood globules and egg-albumen are always voided with the urine, while the usual serum-albumen does not escape so easily. The causes of hæmatogenous albuminuria are: First, and principally, a slowing of the blood stream, combined with dilatation of the vessels, and increase of the blood pressure, and possibly with a functional disturbance of the epithelium of the glomeruli. Secondly, a probable vasomotor influence, and this in febrile conditions, in epileptics, and in healthy individuals. Thirdly, a further possible cause is certain chemical conditions of the blood, in which a form of albumen is formed possessing the same capability of passing through the epithelium as the albumen of egg and hæmoglobin.

100. In this interesting and practical lecture Dr. Johnson says that in the great majority of cases *backache* has its seat in the muscles, and is a simple result of strain or over-fatigue of the lumbar and erectores spinæ muscles and tendons. The remarkable feature of this pain is that, while it may persist during rest in bed, it is usually much increased by the first movements after rest, but gradually diminishes after moderate exercise. A common cause of painful over-strain of the dorsal muscles is an excessive weight in the abdomen, such as results from the advanced stage of pregnancy; an accumulation of dropsical liquid, whether ascitic or ovarian; or an excessive development of fat. For the permanent relief of the last the author relies upon a dietary, which he details. Some patients are alarmed by a turbidity of urine in addition to pain in the back. The backache and pains in the limbs, of which these patients complain, are the result of malnutrition and irritation of the muscles from some defect in the process of digestion and assimilation. Muscular rheumatism may be a result of muscular dyspepsia. In this form of dyspeptic myalgia, while the muscles are starved and tortured, their unassimilated nutriment is ejected by the kidneys in the form of urea and urates. "*Growing pains*" are the result of over-fatigue of young and growing muscles. A severe form of *lumbago* often comes on suddenly in stooping to pick up something from the floor, or perhaps to pull on a boot. This is probably caused by cramp, or the rupture of some fibers of a muscle during the act of contraction. The common exciting causes of *cramp* are fatigue and cold, and disorders of digestion. An indigestible article of food, which in one individual will cause pain and cramp in the stomach, may in another excite cramp in one or more muscles, thus affording another illustration of "muscular dyspepsia." Exposure to cold and damp is a common and influential cause of muscular pains in the back and elsewhere. In all cases of severe pain in the back, the possibility of aneurism of the aorta should be constantly borne in mind. Cancerous glands in the abdomen are among the comparatively rare causes of pain in the back. Disease of the kidneys is a not uncommon cause of more or less severe pain in one or both loins. The forms of kidney disease which are the most frequent causes of lumbar pain are: calculus in the kidney, but especially in the ureter; malignant or scrofulous disease, with enlargement of the gland; acute congestive forms of Bright's disease; temporary blocking of the ureter by a blood-clot in cases of renal hæmorrhage; distention and dilatation of the pelvis of the kidney from retention of urine from various causes. Nephralgia in some gouty and dyspeptic subjects appears to result from the highly acid and irritating quality of the urine. The pain of gastric ulcer is often referred to the back. Among other causes of backache are: uterine diseases and displacements, diseases of the bones of the spine and of the spinal cord. The pain in the back, which occurs at the beginning of many acute diseases, especially the febrile exanthemata, and which is usually complained of during the initiatory fever of small-pox, probably has its seat in the spinal cord.

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By GASPAR GRISWOLD, M. D.

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2. Some interesting experiments on *the influence of season and temperature on the action of drugs*, by Dr. Ringer, show that: 1. In the summer months pilocarpine always strongly antagonizes the action of extract of muscaria upon the frog's heart; but in the winter months this antagonism is slight or altogether absent. 2. The same is true of the antagonism between atropia and aconitia. 3. These differences are due to temperature; for, if in the winter months frogs be kept for several days at 60° F., the antagonisms become well marked, and, indeed, as strong as in the summer months. 4. In winter atropia slows and strengthens the action of the frog's heart; in summer it slows and weakens it. 5. These differences suggest that temperature affects the composition of the protoplasmic molecules of the structure of the frog's heart.

3. Professor Charcot calls attention to the fact that *static or frictional electricity*, although the first to be used in medicine, has of late been almost altogether displaced by the galvanic and faradaic currents. He then gives a synopsis of the theory of static electricity, and describes the different machines most in use. A description follows of the manner in which frictional electricity has been employed in the treatment of hysterical and other nervous troubles in his service and that of M. Vigouroux. The patient is placed upon an insulated platform, and is then charged with static electricity. It must not be considered that the electricity merely accumulates in the patient, remaining constant and stagnant, so to speak; it is given off so rapidly to the atmosphere that, if the current from the battery be intermitted, even for a minute or two, the platform ceases to give evidence of being charged with electricity. The escape of the electricity takes place so rapidly from the salient points of the individual receiving it—from his hair, face, finger-ends, etc.—that his hair stands erect, and on the cutaneous surface is excited a sensation like the contact of cool air, even at times a feeling of numbness and pricking. If a metallic ball, half an inch or so in diameter, be brought to within six or seven inches of any portion of the patient's surface, this feeling of coolness is increased until it becomes very distinct; this is called the electric "*souffle*." If the same ball be brought within two or three inches, a phenomenon ensues called the "*aigrette*"; this is formed by a collection of fine luminous *striæ*, apparently surrounded with a bluish vapor, radiating from the patient's surface to the ball as a sort of focus. If the ball be brought still nearer, a spark is given off from the patient; this is attended with a sharp, stinging sensation, and some redness is visible at the point for a few minutes or longer. These phenomena are more marked as the patient becomes more highly charged, or a larger ball is used; it is perhaps unnecessary to mention that the ball must be connected with the ground in some way in order to draw the electricity from the patient. A spark such as has been described will cause forcible localized muscular contraction even in cases where the faradaic excitability has disappeared; and the spark is not more painful than the powerful galvanic and faradaic currents which are required in cases where the reaction is impaired. Professor Charcot, in the course of his lecture, caused three patients suffering from hysterical hemi-anæsthesia — one also with achromatopsia, and one in whom anæsthesia had begun to extend to the healthy side—to ascend insulated platforms and submit to electrization. After fifteen or twenty minutes all had recovered sensation, and the achromatopsia had disappeared. This improvement will last about forty-eight hours, when the symptoms will return; but Charcot believes that a general amelioration does, after a time, develop from repetition of the treatment, and that recovery occasionally occurs. It rarely happens that in one of these patients the *electric bath*, as it is called, does not produce the usual return of sensation, etc.; it has been learned by experience that this failure of the treatment, occurring in a case where it is commonly successful, shows that a convulsive attack is impending. The author admits that the use of static electricity is still in the stage of experimentation and investigation, but he has seen enough to render him confident that by next year he will be able to report much that is definite and satisfactory with reference to its application, not only to hysterical affections, but also to many other diseases of the nervous system. He merely notices its efficacy in Bell's palsy and paralysis agitans; the former it seems to cure, the latter it affects favorably, but a cure, of course, is not to be expected.

12. M. Constantin Paul speaks in high terms of the advantages to be derived from *washing out the stomach* in certain diseases, and makes the following practical suggestions: A stiff tube, lubricated with vaseline, should be introduced at first; a soft tube, no longer lubricated, may be substituted as soon as the patient becomes accustomed to the operation and begins to learn to swallow the tube. The patient is most comfortably placed in an arm-chair, leaning a little backward, with the head supported; the syphon apparatus of Faucher is better than any of those in which a pump or syringe is employed. The diameter of the tube varies between twelve and eight millimetres (one half to one third of an inch). About a quart of tepid water should be allowed to flow into the stomach at first, being withdrawn by syphonage; subsequent injections, continued until they come out perfectly clean, may be a little cooler to have a stimulant effect, and may be made alkaline with bicarbonate of sodium, or antiseptic with hyposulphite of sodium, etc. With proper encouragement, the ordinary patient may be taught to swallow the tube himself; as soon as this lesson is learned, there are no more chokings, struggles, etc., and the operation becomes easy and inoffensive. The author makes an interesting observation, to the effect that, as a rule, when the tube enters a dilated and tympanitic stomach, there is not observed that sudden exit of gas which might be expected under the circumstances. Indeed, syphonage is required to remove the gaseous as well as the fluid contents of distended stomachs. This would go to show that the dilatation is in most cases due to relaxation of the muscular coat rather than to formation of gas, and that the gas is sucked in as the stomach dilates, instead of being an agent in the process.

13. M. Bondet de Pâris describes, in a very interesting paper, the effects which he has obtained in the *treatment of neuralgia by mechanical vibrations* propagated to the painful point. He employs a tuning-fork, vibrating about two hundred and fifty-six times a second (this produces the fourth C from the bottom of the ordinary piano scale), and kept in motion by electricity. The weight of the tuning-fork is supported by a handle held by the patient or the physician, while a short stem, terminating in a point not more than a centimetre (one third inch) in diameter, conveys the vibrations to the point where their application is desired. It is necessary that the vibrations be distinctly localized in order to be effective, and a point even smaller than one centimetre in diameter is occasionally useful. In a healthy person the vibrations of the tuning-fork produce analgesia, and even well-marked anæsthesia, at the point of application after ten or twenty minutes. In supra-orbital neuralgia, for instance, the pain is rapidly diminished, and soon ceases; in many cases the recovery is permanent after a single application of a few minutes' duration. The treatment is most effective in neuralgias seated where the soft parts are thinly spread out over a bony surface, so that the painful point can be compressed between the end of the instrument and the bone. So far, the author has experimented only with neuralgias about the head; he has not yet extended his researches to the limbs and trunk. He suggests that possibly, in his cases, the propagation of the vibrations through the cranium to the brain may be a factor in the process of cure. The fact that sensations resembling vertigo, and in some cases an almost uncontrollable desire to sleep, have occurred during the application, lends some coloring to this idea. [Neuralgias have always resisted treatment with an obstinacy most demoralizing to physicians, and rank high among those affections which stand in the light of opprobria to the profession. A remedy so simple, and yet so entirely without unpleasant possible effects, would deserve a trial even if less enthusiastically advocated. It is to be regretted that the author's description of the practical details of his instrument is decidedly meager, and that no diagram supplements it. It seems possible at least, if not probable, that by mechanical vibrations we may accomplish as much or more in sciatica, locomotor ataxia, and other painful affections, as we are now able to do with such heroic remedies as the actual cautery, strong galvanic currents, etc.]

14. Dr. Hamilton believes that he was the first to use the *phosphate of silver* in medicine, in 1878. He describes it as a tribasic phosphate ($Ag_3 PO_4$); a heavy, yellow powder, slightly darkened by exposure to light. It is best given with glycerine as an excipient, being decomposed by vegetable substances; therefore, confection of rose should not be used in preparing it in pill form. It may be given for months in doses of from a third to half a grain, and produces less gastric irritation than nitrate of silver or phosphide of zinc; it does not discolor the skin. The author has employed it with advantage in cases of spinal sclerosis, and even occasionally in more acute myelitis, and in epilepsy and cerebral tumor.

16. Dr. Harkin commences his paper by saying that, since "*chlorate of potash* exerts a salutary influence on all vital phenomena, especially upon the processes of cell growth, nutrition, and secretion, we might naturally expect to find that its administration in an abnormal condition of the conglomerate glands would be followed by evidence of its power." With this most sweeping proposition for a beginning, the author goes on to praise unreservedly the unrivaled efficacy of his (apparently) favorite drug. It cures alike dry mouth from deficient action of the salivary glands, and ptyalism from their undue excitation; agalactia and galactorrhœa with equal readiness give place to a normal secretion of milk under its benign influence. It has "great efficacy in the puerperal condition," not only facilitating fetal respiration, as shown by Sir James Y. Simpson, but relieving almost all the unpleasant sensations of which the pregnant woman may complain. Epilepsy in children and adults may be cured by this "sovereign remedy," as the author calls it; and, in aneurism, tabes mesenterica, diarrhœa, and many skin diseases, it is not less successful. [It is refreshing to read Dr. Harkin's enthusiastic and confident paper, after having our views about chlorate of potassium disturbed by the German observers, who are every month telling us that it changes hæmoglobin into methæmoglobin, and destroys our red blood corpuscles.]

18. Dr. Schwarz strenuously advocates the idea that *iodine, or iodide of potassium, in croupous pneumonia*, is a true specific against simple, uncomplicated cases; that, administered at the beginning of the changes in the lung (within twenty-four or thirty-six hours of the introductory chill), it will cut short the disease. In support of this view he gives histories, with temperature charts, to show the sudden fall at the crisis in ten cases treated by him with the iodide of potassium, or iodine. In all these cases the temperature, pulse, and respiration were entirely consistent with the diagnosis of pneumonia, and the physical signs were distinct, and are reported in detail in the histories. In nine of these cases the crisis occurred before the end of the second day (that is, within forty-eight hours from the occurrence of the chill), and in the tenth even a few hours sooner. The crisis seems to have been quite typical in all the cases; there occurred a rapid fall of temperature and pulse-rate, the breathing became slower and easier, and *râles redux* became audible over the affected lung. From this point convalescence progressed as usual. All the patients were seen by the author soon after the occurrence of the chill, and treatment was begun as soon as the diagnosis was positive or even strongly probable. In every one of the cases quoted crepitant *râles* were distinct, and followed by unmistakable evidences of consolidation. Stress is laid upon this fact, to show that the author really was treating pneumonia, and that his good results are not to be explained by an accusation of careless diagnosis. The treatment was as follows: ℞. Potass. iodid., 2 grammes [gr. xxx]; aq., 120 grammes [℥ iv]; syr. simp., 30 grammes [℥ j]. M. Sig. A teaspoonful [*Löffel*] every hour. Or: ℞. Tinct. iodinii, gtt. v; aq. destill., 120 grammes [℥ iv]; syr. simp., 30 grammes [℥ j]. M. Sig. A teaspoonful [*Löffel*] every hour. [If the German *Löffel* may be taken as about equivalent to our teaspoon, it will be seen that, according to the foregoing formulæ, patients would receive four fifths of a grain of iodide of potassium in the former case, or about one seventh of a drop of tincture of iodine in the latter, every hour. Iodide of potassium and iodine are given so frequently that their effects are well understood by every physician; we are not disposed to admit readily any mysterious efficacy in the case of drugs with which we are so familiar. Can we, then, believe that, in a typical case of pneumonia, naturally tending to a termination by crisis between the fifth and eighth days, this crisis can be induced within forty-eight hours by the administration of such doses of iodide of potassium, or iodine, as are daily prescribed in other affections without producing very marked effects—at least no effects from which we could infer such a controlling influence over an acute febrile disease like pneumonia? Clear and to the point the author's paper certainly is, but he asks us to believe a great deal; further clinical evidence is desirable in a matter so important.]

21. MM. Bourneville and d'Olier, having employed *inhalation of bromide of ethyl* in about five hundred cases, report the following results of their observations: 1. The dilatation of the pupil which has been remarked at the beginning of the inhalation is inconstant. 2. It is exceptional for complete muscular relaxation to occur. 3. The degree of anæsthesia produced varies much in different subjects. 4. The temperature and the secretions appear in general to undergo no modification. 5. The pulse and respiration are moderately accelerated. 6. More or less tremor of the arms and legs is produced during the inhalation, but does not persist afterward. 7. Hysterical attacks are usually easily cut short by inhalation of bromide of ethyl. 8. Epileptic attacks are sometimes arrested by the administration of bromide of ethyl during the tonic stage; more frequently the inhalation fails. 9. In epilepsy, the daily administration of bromide of ethyl by inhalation, for a period of from one to two months, notably diminishes the frequency of the paroxysms.

22. Dr. Richardson reports nine cases of *nævus successfully removed with ethylate of sodium.* If ethylate of sodium be placed in contact with organic matters, it is decomposed; the sodium is set free, oxidizes, and acts as a caustic, while the remainder of the compound is formed into absolute alcohol again, and saturates the adjacent tissues, preventing their decomposition. The ethylate should be applied to the nævus by means of a glass rod; in young children this may be done while they are asleep, without waking them. A hard crust forms, which dries and exfoliates in five or six days. Poultices, or moisture in any form, should not be applied to hasten the separation of this crust; the contact of moisture causes the crust to decompose and become offensive, while, if left to itself, the antiseptic action of the alcohol enables it to dry up and separate without unpleasant odor. The crust should be allowed to separate of its own accord; ill-advised efforts to detach it prematurely may produce hæmorrhage, irritate the nævus, and so retard its disappearance. The application of the ethylate is usually not painful, and is effective; ordinary cases are cured without the formation of a scar in two or three sittings. The ethylate of potassium is also effective, but seems more likely to cause hæmorrhage.

26. Dr. Tomkins advocates the use of *salicylate of sodium as an antipyretic in typhoid fever*, and reports the results of forty-six cases in which it was employed. [His grounds for preferring salicylate of sodium to the cold bath and quinine are certainly peculiar. He asserts that the cold bath can not be conveniently resorted to in private houses, is not always reliable, and not always safe; he does not consider the cold pack. Against quinine he urges that the doses necessary are taken by patients with loathing, and are apt to disturb the stomach. His routine treatment is fifteen to twenty grains of sodium salicylate every two hours, beginning as soon as the temperature in the axilla reaches 102° F. This is continued for about six doses, when the temperature will generally have fallen two or three degrees. The dose is then diminished one half, and the administration is continued at the same intervals for nine or ten days, until the fever subsides. The original dose is returned to if the temperature rises to 102°. The author admits that ringing in the ears and deafness occur, but does not mention vomiting! The following considerations are certainly appropriate: 1. Where the cold bath is seriously inconvenient (and this must be only rarely), the wet pack is available; and a temporary reduction of temperature (which is all that can be accomplished by any of the means under discussion) is obtained by cold applications without digestive disturbance or annoying nervous symptoms. The importance of keeping the patient comfortable and avoiding nausea and vomiting can not be over-estimated in the treatment of a continued disease like typhoid fever, which kills by asthenia in the majority of cases. 2. With reference to quinine, it is well established that the antipyretic effect of a given dose is equal to that of five times the quantity of salicylate of sodium; and it is a matter of daily experience that twenty grains of salicylate of sodium, given every two hours, will produce more vomiting, and are more apt to be followed by delirium and amaurosis, than the quantity of quinine which will produce the same antipyretic effect. The taste of quinine is easily avoided by administering it in gelatine capsules. The author's objections to the cold bath and quinine seem trivial and exaggerated, and his views with reference to the comfort with which a patient may continue to take from ten to twenty grains of salicylate of sodium every two hours for ten days seem strangely at variance with the experience of other observers.]

27. M. Labbé has used the *salicylate of sodium in neuralgia* with varying success. Some cases, unaffected by quinine, were cured with the salicylate; others, which resisted the salicylate, yielded to quinine. The author is of opinion that the salicylate of sodium finds its successes in connection with neuralgias of rheumatic origin. [It is interesting to observe that one of the patients treated by the author was a diabetic, and that no bad effects were observed to follow the administration of the salicylate in this case. Gubler has reported a case in which the salicylate, in moderate doses, produced strange and alarming nervous disturbances; the subject, however, has not received much attention.]

31. Dr. Neumeister writes that he was very much impressed by the confident assertions of Dr. Georg Guttmann with reference to the efficacy of *pilocarpine in diphtheria*, and hastened to see for himself if at last there had in fact appeared an antidote to that fearful disease. By the kindness of Dr. Langenbuch he was enabled to treat with pilocarpine, in hospital [*Lazaruskrankenhaus*], twenty-eight cases of diphtheria —five in adults and twenty-three in children, these last almost all under five years of age. The cases were severe ones, but Dr. Guttmann especially recommended pilocarpine as efficient and prompt of action in serious cases. The details of Dr. Guttmann's treatment were carefully carried out, and the pilocarpine was given night and day, without omission, every hour: to children 1–2½ milligrammes [gr. $\frac{1}{66}$–gr. $\frac{1}{25}$], and to adults 2–4 milligrammes [gr. $\frac{1}{33}$–gr. $\frac{1}{16}$]. Three patients were tracheotomized before the treatment was begun, and four during its progress. Of the twenty-eight patients, only eleven were salivated; of the twenty-three children, only eight were salivated. In the case of one boy, a strong little fellow, the treatment was continued for ten days, without any increase of saliva being produced. Four of the cases were diphtheria complicating scarlatina; of these patients, only one experienced an increase of saliva, although in this case the increase was marked. Nor, in the cases in which salivation was produced, did the membrane seem to be loosened, or its production limited or retarded. Thirteen children died. The administration of pilocarpine seemed to depress the action of the heart, and render the pulse feeble and irregular. As a result of his observation of these twenty-eight cases, Dr. Neumeister is forced to conclude: 1. That the action of pilocarpine in producing salivation is uncertain. 2. That, in those cases in which it is successful in producing salivation, the membrane does not seem to be in any way loosened, and that it is not rational to suppose that a membrane so deeply infiltrated that sloughing must attend and precede its separation could be removed by a mere increase in the saliva. 3. That pilocarpine in children may produce serious cardiac depression and a condition amounting almost to collapse, even when given in small doses. On the whole, the author is evidently inclined to deny that the administration of pilocarpine is in any way serviceable in diphtheria, and to consider that it produces an amount of cardiac depression which may be dangerous. [It is interesting to notice, in this connection, that a given dose of pilocarpine is less depressing to the heart than the corresponding quantity of jaborandi; and that recent researches render it probable that jaborandi contains principles, not yet separated, which have a special action as cardiac sedatives.]

33. Dr. Ringer arrives at the following results by physiological experimentation: *Pilocarpine and muscaria*, both, slow, weaken, and finally paralyze the heart's action; probably by combining with the molecules of the excito-motor nervous apparatus and of the muscular tissue of the heart, and not by exciting an inhibitory influence. *Extract of jaborandi* depresses the heart much more than the corresponding dose of pilocarpine; hence pilocarpine is not the principle in jaborandi which is responsible for most of its depressing effect upon the heart. *Atropia* antagonizes pilocarpine and muscaria, because it has a stronger affinity for the muscular and nervous structure of the heart than these substances, and displaces them, replacing their effect by its own; its stimulant effect in this connection is not due to paralysis of inhibition.

36. Dr. Seguin gives an abstract of the literature on the subject of *hyoscyamia*, and reports some cases treated with it by himself and other physicians. Merck's hyoscyamia is the most reliable, and is to be had in two forms: 1. An amorphous, resinous extract (dose, $\frac{1}{6}$–$\frac{1}{4}$ gr.), about fifteen cents a grain at wholesale. 2. A crystallizable alkaloid (dose, $\frac{1}{50}$ gr.), seventy-five cents a grain at wholesale. The second is the better. Notwithstanding the conflicting opinions which have been held, that hyoscyamia and atropia are identical, etc., there is abundant clinical testimony to show that hyoscyamia really does possess peculiar sedative, motor-depressant, and hypnotic properties. Small doses diminish the pulse rate and quiet the mind somewhat; large doses cause increased frequency of the pulse, failure of muscular power, and some excitement. When these larger doses are administered to patients already suffering from excitement (mania, delirium tremens, etc.), the effect of the drug is not added to the excitement already existing, but is substitutive, taking the place of the delusion, etc., and producing instead the so-called "physiological mania." Sleep soon follows, and the patient generally awakes much quieter and steadier. Large doses, such as are generally required in cases of mania, may produce retention of urine, and are pretty sure to be attended with some dryness of the mouth and loss of appetite. Vomiting may occur, but is rarely marked. The testimony of the most experienced seems conclusive to the effect that hyoscyamia will quiet the patient and produce sleep in cases of maniacal excitement where morphia, chloral, and other drugs of the class have failed.

38. M. Desnos reports three cases of *exophthalmic goître treated with duboisine*, on account of the resemblance which the latter bears to atropine. The neutral sulphate of duboisine was given hypodermically, one dose of from a half to one milligramme (gr. $\frac{1}{120}-\frac{1}{60}$) daily; this treatment was kept up for months, the dose being diminished when dryness of the mouth or dilatation of the pupils became marked. Some permanent benefit was observed in all the cases; the action of the heart became steadier and slower, and the general health was much improved. It was also remarked that the goître, although it did not diminish much in size, became harder, pulsated less, and gave less inconvenience.

41. M. Guéneau de Mussy mentions incidentally a few formulæ which he is in the habit of employing in the treatment of bronchitis, but spends more time inveighing against *proprietary so-called "pectorals."* The formulæ quoted present nothing original or new. He then relates that a patient of his, a Spanish lady, informed him that she was in the habit of using what she called *sarragota* for constipation, and preferred it to all other remedies. Investigating the matter, he discovered that she meant grains of *psyllium*, for which the Spanish name is *sarragota*. He has since used the remedy in many cases, prescribing a tablespoonful in a wineglassful of water before dinner. Most patients experience an agreeable and satisfactory laxative effect; a few need occasional doses of aloes or rhubarb in addition. The author calls attention to the grains of psyllium, not with the intention of praising them very highly, but merely because their laxative properties are not generally known.

43. As a result of physiological experimentation, Dr. Ott formulates the following conclusions with reference to *piscidia*, the active principle of piscidia erythrina: 1. Piscidia is a narcotic. 2. It neither paralyzes nor excites the motor nerves. 3. It paralyzes the sensory ganglia of the spinal cord. 4. It produces convulsions, partly by stimulation of the motor centers in the cord, and partly by heightened excitability of the striated muscles. 5. It reduces the frequency of the heart's action by a direct action upon the heart muscle. 6. Arterial tension at first rises, from stimulation of the vaso-motor center; it afterward falls, from paralysis of that center, and of the heart itself. 7. It first contracts the pupil and then dilates it.

45. Dr. Beck regrets that, since the benzoate of sodium has failed to produce the promised effects in the treatment of phthisis, physicians have seemed lukewarm in the medicinal treatment of coughs, acute and chronic. He has himself used *apomorphine as an expectorant* with excellent results for two years, and feels impelled by his success to report his method of treatment to the profession. As regards dosage, he gives about a milligramme [gr. $\frac{1}{66}$] of the best crystallizable apomorphine to children of eleven years and younger, every two or three hours; for older children he increases the dose to one and a half milligramme [gr. $\frac{1}{44}$], at the same interval. To adults he usually gives the following: ℞. Apomorphiæ muriat. (cryst.), 6 centigrammes [gr. j.]; acidi muriat. dil., 1 gramme [♏ xv.]; aq. destill., 120 grammes [℥ iv.]; syr. simp., 30 grammes [℥ j]. M. Sig. One dessertspoonful every two or three hours. The author reports excellent results from the use of this prescription in sixty cases of catarrhal bronchitis and thirty-one of broncho-pneumonia.

48. M. Luton discovered by accident the effects of the following *exhilarating mixture:* Tincture of ergot of rye, five grammes [gr. 75]; solution of phosphate of sodium (10 per cent.), 15 grammes [℥ ss]. Mix in a quarter of a glass of sweetened water, and give at one dose on an empty stomach. In very susceptible, excitable people, a condition is produced resembling that following the inhalation of nitrous-oxide gas; they laugh excessively, feel slight dizziness on attempting to walk; and in many ways suggest alcoholic intoxication. In those who are more sedate and imperturbable, a condition of mild exhilaration merely is induced; the cutaneous circulation is improved, a feeling of buoyancy and cheerfulness develops itself, and lasts for several hours, the patients being agreeably conscious of mental and physical stimulation. The author has verified these observations in so many cases that they must be considered established. He has found different individuals unequally susceptible, but has been able to assure himself that there is always some effect. As might be expected, men are less affected than women; in no case has any unpleasant result been observed. The author feels himself justified in recommending his discovery to the profession, although compelled to do so on a purely empirical basis, having arrived at no satisfactory explanation of the action of the mixture. He especially advises its use in cases of melancholia, hysteria, chlorosis, and the various conditions in which languor and depression of spirits are present. The patients to whom he has given it were sufficiently convinced of the efficacy of his prescription to ask for its repetition, assuring him of the benefit they derived from its use.

55. *Absorbent cotton* may be made as follows: Boil with a five-per-cent. solution of caustic potash or soda for half an hour. Then wash thoroughly, press out the excess of water, and immerse in a five-per-cent. solution of chlorinated lime for fifteen or twenty minutes. Again wash; then dip in water acidulated with hydrochloric acid, and thoroughly wash in simple water. Again press out the excess of water, and again boil for fifteen or twenty minutes in a five-per-cent. solution of caustic soda or potash. Now wash for the last time, dipping in acidulated water, and washing thoroughly with pure water. Afterward press out and dry quickly. So prepared, absorbent cotton will cost about forty cents a pound, instead of a dollar and a half, the price of the commercial article.

QUARTERLY REPORT ON VENEREAL AND GENITO-URINARY DISEASES.

No. VI.

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8. The evidence which Dr. Dana adduces as bearing upon *the prognosis of syphilis among seamen* is as follows: Among a large number of seamen who came under his charge, while performing the duties of assistant surgeon in the U. S. marine-hospital service, for various ailments, there were 378 patients who were examined specially with reference to syphilis, and the results of these examinations were recorded in tabular form. Of these 378 patients 12 had “hard” chancres, 31 showed symptoms of secondary syphilis, and 106 gave a pretty clear history of antecedent syphilis, present signs of the disease being wanting. There were 149 cases, then, with a history of syphilis past or present. There were also twelve cases of “soft” chancre. These statistics are applied to the estimated total number of sailors in the American service, which amounts to some 170,000. It is stated that the 378 patients did not include all that were examined with reference to syphilis, but that the results in other cases were of a similar character, and were not recorded. Further statistics are produced from general records of the marine-hospital service, to show the relative mortality from syphilis. Records of 92,394 cases, from 1873 to 1879, with 2,687 deaths from all causes, give only 37 deaths as due to syphilis. In another table relating to the same period, compiled from statistics of the Seamen's Retreat Hospital, on Staten Island, although 727 cases of syphilis were treated, no deaths are ascribed to this disease. The writer's conclusions are as follows: First, that syphilis, as a rule, runs a very mild course indeed among American seamen, and physiologically incapacitates them less than either soft chancre or gonorrhœa with their complications and sequelæ. Secondly. That it runs this course often without regular treatment, and almost always in spite of irregular living and unhygienic surroundings. These two conclusions, it may be added, tend to confirm the views of those who believe: (*a*) that syphilis is curable, and, furthermore, (*b*) that it very often has a tendency to spontaneous cure, (*c*) that this present benignity of the syphilitic poison is due in part to treatment, in part to a gradual change, either in the character of the poison, or in the organism it feeds on, or in both." [There is no doubt that Dr. Dana's experience justified him in concluding, as he did, that syphilis is rarely a very severe or dangerous disease. One need not seek far to find abundant confirmation of this opinion. According to Fournier, in his recent book on "Syphilis and Marriage," the disease, except in very rare cases, constitutes only a temporary bar to matrimony. Sigmund, of Vienna, makes the statement that forty per cent. of the cases are of such a mild and inoffensive character that, without careful scrutiny, the symptoms of the disease would entirely escape the notice both of the patient and of the physician. But we believe that Dr. Dana must have arrived at his conclusions rather through impressions wrought by his general experience of the disease than through any process of induction from his recorded facts. His statistics alone would hardly convince one of the truth of his assertions. Thus, when it is stated that the ratio of hard to soft chancre among seamen is 12 : 12, because during a certain limited period the writer noted twelve chancres and twelve chancroids, the statistics appear rather inadequate. Again, when it is admitted that in four cases the effects of secondary syphilis were "really very bad," and but thirty-one cases presenting secondary symptoms were recorded, we should naturally infer that the average severity of the disease was not slight. With regard to the one hundred and six cases in which a history of past syphilis was obtained, we must take into consideration the credibility of such evidence, bearing in mind the fact that among a large proportion of the lower classes "the pox" is a synonym for all venereal diseases. Finally, we can not attach much importance to the statistics relating to mortality. It is altogether probable that but a small proportion of the deaths from syphilitic brain disease, syphilitic phthisis, or amyloid degeneration of internal organs due to syphilis, are ascribed to their real cause, even with the advantages which a hospital affords for observation.

22. Mr. Cousins, surgeon to the Royal Portsmouth Hospital, describes a staff for which he claims certain advantages, particularly in the operation of *lithotomy in children.* The instrument is a modified rectangular staff, with a rounded-off angle, a long beak, and the point slightly turned upward. The lateral groove begins half an inch above the angle, and terminates at about the same distance from the point. The main peculiarity is the length of the beak, and this varies regularly with the size of the staff. The advantages claimed are stated as follows: "1. *The sharpness of the angle.* This permits the instrument to be easily felt, and so assists the operator in making the deep perineal incision. As soon as the angle is exposed, he readily learns by the finger the point of the staff he has reached. When the finger enters the groove, the position is indicated exactly by the part of the nail engaged in it. The point of the finger-nail informs the operator that he is on the angle; but, directly the side of the nail is well insinuated in the groove, he can be sure that he has reached the beak, and that a simple movement of the knife will open the bladder. 2. *The beak is nearly straight, and is fixed at a right angle on the staff.* When the instrument is held firmly in position under the pubic arch, the floor of the bladder is steadily depressed; at the same time the beak is parallel to the rectum, and so protects the organ from injury. The horizontal beak forms a straight guide into the bladder; and surely a straight movement of the knife in the groove is more readily and safely accomplished than a downward, inward, and upward thrust, which must be made around the large angle of the ordinary staff. Moreover, in making deep incision of the prostate and neck of the bladder, the knife can be accurately lateralized; the point can be easily directed upward during the whole proceeding; its back can be kept in contact with the staff; and the depth of the incision estimated by the movement of the knife along the side of the left forefinger. Again, in withdrawing the knife, after the completion of the deep incision, there is less danger of dividing too freely the deep structures, and of cutting out at too great an angle on the staff. 3. *The long beak.* This part of the staff enters the bladder to the extent of an inch or a little more, and is kept in contact with the stone. Now, the long beak affords important advantages, especially in the operation upon children, for during early life the urethral structures are more soft and delicate, and the bladder is situated high up behind the pubic arch. It is a simple safeguard against one of the most common and painful accidents which occur during lithotomy, as the point can not be pushed out of the bladder. It has frequently happened that, after only partial division of the urethral structures, and an effort to introduce the finger, the operator has found himself suddenly foiled, from the point of the short staff having been pushed out of the bladder. Such an accident I believe to be impossible with the long beak."

32. The operation for *ablation of the penis* described by Mr. McGann is a modification of that described by Humphry in Holmes's "System of Surgery," which consists in making a straight cut through the penis anterior to the scrotum, then making an incision along the raphé into the perinæum, exposing the corpus spongiosum. The latter is then dissected from the corpora cavernosa as far as the crura, turned down into the perinæum, and left hanging half an inch beyond the level of the skin. The cut edges of the scrotum are then united in front of the urethral orifice. The objection found by McGann to this operation is the length of time required for the scrotal wound to heal. The writer, therefore, has modified it by leaving a bridge of skin between the amputated penis and the perineal wound. The incision is first made in the perinæum down to the corpus spongiosum. The penis is then amputated, when the spongy body retracts and presents in the perineal wound. The lower and posterior aspect of the cut urethra is then slit to the extent of half an inch, and the margins are secured to the perineal integument.

Miscellany.

THERAPEUTICAL NOTES.

Salicylic Acid. — M. Bouloumié (*Thèse*, quoted in "Bull. Gén. de Thérap.," January 15, 1881) concludes: 1. That salicylate of sodium is safe and most likely to succeed in young men not yet the subjects of the gouty cachexia and with no tendency to nervous depression. 2. That its special action is usually as an analgesic. 3. That its efficacy in rheumatism is abundantly proved by hospital experience, but that such testimony is lacking in regard to gout, since gout is almost unknown in hospital practice. 4. In his experience, in gout (more than a hundred cases, with only four or five complete failures), about one half the patients are cured of the attack at once, and in the other half the pain is always overcome, but the affection seizes upon other joints—never, however, attacking the viscera. 5. In chronic gout he has seen several cures, and no unfavorable effects from a continuance of the drug for a year at a time (75 grains a day). If debility comes on, he prescribes iodide of potassium (30 grains a day), still continuing the salicylate. 6. In trifacial neuralgia, even tic douloureux of many years' standing, the results have been most remarkable. 7. Given at the outset of a first attack of acute rheumatism, it not only arrests the progress of the joint affection at once, but prevents invasion of the heart —it stops the whole morbid process. 8. A cure may take place in cases of chronic or nodose rheumatism. ═══ Dr. Henry Tomkins ("Lancet," March 12, 19, 1881) favors the use of salicylate of sodium, instead of cold baths, as an antipyretic in cases of typhoid fever calling for reduction of temperature. The two chief counter-indications are: preëxisting renal disease and extensive implication of the lungs. If the heart's action is already weakened, it is important to give a fair amount of alcohol with each dose. He has not found the purging increased by the drug. ═══ In three well-marked cases of diabetes, Dr. James Sawyer ("Practitioner," January, 1881) has obtained excellent results from the use of 15 grains of salicylate of sodium, with 7 minims of tincture of opium, three times a day, continued for several weeks. The diet was not restricted. The author seems to imply that, by using the salicylate as an adjuvant, the well-known benefit from opium in diabetes may be secured with smaller doses of the latter drug than would otherwise be necessary. ═══ M. Labbé ("Rev. de Thérap.," quoted in "London Med. Record," April, 1881), after having obtained good results with salicylate of sodium in cases of suborbital and sciatic neuralgia that had resisted sulphate of quinine, has not latterly found it so successful, and thinks that it succeeds only in rheumatic persons. ═══ Dr. Prosser James ("Brit. Med. Jour.," March 19, 1881) thinks that other salicylates than that of sodium might often be used with advantage. He suggests the salicylate of ammonium as a freely soluble and diffusible salt. The salicylate of potassium is often to be preferred in gouty conditions, some forms of dyspepsia, the various manifestations of lithiasis, and the like. In gouty patients, however, the salicylate of lithium is even more efficient. It is suggested that a salicylate of calcium might obviate any possible action of salicylic acid on the teeth or the bones. Salicylate of quinia is an elegant substitute for the separate administration of salicylic acid and quinine. The salicylate of cinchonidia he has found very useful (in the form of Wyeth's compressed tablets) as a tonic and antiperiodic in neuralgia, rheumatism, sciatica, etc., but has not yet tried it in acute rheumatism. It contains about one third of its weight of salicylic acid, and is incompatible with iron. As a general tonic (2½ to 5 grains twice or three times a day) it may be given for a considerable period. ═══ Dr. George Kemp (*Ibid.*, April 2, 1881), thinks that salicylic acid can not be given with impunity in such large doses as the salicylate of sodium can. The maximum dose should not exceed 8 grains, repeated as often as may be required. He regards the acid as a useful counter-irritant in superficial rheumatism, an ointment (30 grains to the ounce) alleviating pain in a remarkable degree, perhaps not wholly from its counter-irritant action, but from a portion of it being absorbed. Its action in this respect is greatly enhanced by the addition of an equal quantity of iodide of potassium. In a case of severe and long-continued dyspepsia, implicating both stomach and duodenum, with marked bacterial fermentation, and complicated with an overloaded and sluggish colon, great relief was afforded by an enema of 30 grains of salicylic acid and half an ounce of tartrate of potassium, dissolved in a pint and a half of lukewarm water. ═══ In the German army, according to Mr. F. C. Clayton ("Phar. Jour. and Trans.," quoted in "Am. Jour. of Pharm.," January, 1881), the following powder is applied to the men's feet while on a march: salicylic acid, 3 parts; starch, 10 parts; powdered talc, 87 parts. It is applied dry, daily. It is thought to prevent soreness of the feet by overcoming the irritating property of the perspiration. In garrison, it is used every two or three days only. In the Russian army salicylic acid "appears to be of no use whatever as a remedy for foot sores." ═══ Preissmann (quoted in "Union Méd.," January 6, 1881) removes the scales from patches of psoriasis by gentle friction with an alcoholic solution of salicylic acid (1:16). The scales soon fall off, leaving a uniform, red, dry surface, to which any appropriate ointment may be applied. This lotion also allays the itching of prurigo. ═══ Fleischmann (quoted in "Union Méd.," January 8, 1881) highly recommends the following ointment for eczema (variety not stated): ℞. Acid. salicylic., gr. xxii—xxx; vaselin., ℥ j. M.

MEDICO-LEGAL NOTES.

Noteworthy Malpractice Decisions.—A suit brought by a patient of the New York Eye and Ear Infirmary, who charged that the surgeon, by using a brush infected with the discharge of gonorrhœal ophthalmia from some eye on which it had previously been used, had destroyed the sight of both his eyes, has reached final decision in the Court of Appeals. The suit attracted much attention at the time of its trial, three or four years ago, when it resulted in a verdict for the institution. This result has now been confirmed. From the rather meager account given of the opinions of the judges, they seem to have held that, to establish a claim in such a case, the injured patient must show, not only that an improper brush was used, but also that the surgeon was negligent; that is to say, was lacking in ordinary care in taking precautions to avoid a brush which had been dangerously infected. And they considered the jury warranted in reaching the conclusion that such negligence had not been shown by the plaintiff. ═══ The Rhode Island Hospital was sued by a paying patient to recover damages for a dangerous hæmorrhage, which he attributed to unskillful treatment by a surgical *interne* of the hospital, who assumed to treat a wound beyond his skill, instead of sending for the attending surgeon, as he should have done, the results of which were gangrene and amputation of an arm. The suit called for a statement of the legal rules governing the responsibility of an incorporated hospital for its medical attendants. These two are declared: 1. A hospital is not exempt from liability for unskillfulness or neglect, but is responsible for the exercise of reasonable care by the governing authorities in selecting physicians, surgeons, and *internes;* and, if incompetent persons are appointed, is responsible for the results of their neglect or want of skill. 2. If the rules of the hospital require that in specified cases an *interne* shall summon an attending surgeon, and the *interne* fails to do so, the corporation may be liable for the consequences of his neglect. ═══ The right to exhume a corpse for the determination of medico-legal questions has been presented in two instances: In one, a child nearly a year and a half old sustained a fracture of the thigh, for which she was treated. She died about sixteen months afterward; whether from the fracture, from maltreatment, or from other causes, was disputed. The surgeon sued the father of the child for his fees; and this suit was defended on the ground of alleged malpractice in his treatment. To prove this malpractice, the father, by advice of his counsel, employed another physician to exhume the body and remove the fractured bone for examination, which was done. The surgeon against whom the charge of malpractice was pending then instituted a prosecution against the one concerned in the post-mortem, contending that the latter had been guilty of a violation of the statute which punishes "every person who shall remove the dead body of any human being from the grave . . . for the purpose of dissection." The New York Supreme Court decided, in effect, that there was no warrant in the facts for the prosecution. The purpose of the examination, and the consent of the father, showed that the case was not within the intention of the statute, which is to forbid disinterments to obtain material for dissection in the ordinary sense of the term. ═══ In the other instance, which arose in Mississippi, in a controversy over a life insurance policy, it appeared that the insurance company, when the policy was applied for, required the applicant to state whether he had ever received any serious injury, and he made answer that he had not; but, after his death, information reached them that, when the insured was young, his skull was fractured, and he was treated by trephining. To make proof of this, which would relieve them from payment of the insurance money, they asked the court to make an order that the corpse should be exhumed and the skull examined. The court refused, saying that such an order might be made where there was strong reason to believe that without such examination a fraud was likely to be accomplished; but, as the proceeding was very objectionable, it ought only to be allowed on proof that the company had exhausted every other means of obtaining evidence.

Measure of Skill required by the Law.—Does the standard of professional skill vary with the difference in opportunities for observation and experience enjoyed in different localities? The Massachusetts Supreme Court has declared, in a case lately reported, that it does so vary; practitioners in sparsely settled country regions are not supposed to have the same knowledge of unusual cases as may be expected in the cities. The story of the lawsuit was that through some casualty a man sustained a cut, made by glass, across the whole inner side of the wrist, reaching the bone, and severing all the arteries and tendons. This occurred in a small country town of about twenty-five hundred inhabitants, where serious surgical cases were very rare. A physician of the village, who professed no experience in surgery beyond that common among rural practitioners, was employed to treat the wound; the treatment was not entirely successful, and he was sued for malpractice. Experts agreed that the wound was unusual and severe, and differed whether the requisite skill was exercised in treating it. In support of the action, counsel argued that, by undertaking the case, the practitioner engaged to exercise whatever degree of skill the nature of the injury required; if he did not possess that, he should have dressed the wound temporarily and sent the patient to a more skillful surgeon. There was, by the way, an eminent surgeon residing within about four miles, and the sufferer was well able to visit him. But the court declared that the law was not so exacting. The practitioner does not (where there is no special contract) warrant a cure, or engage for extraordinary ability, but only that he will use the ordinary skill, learning, and experience of the profession. And it is to be considered that physicians in villages are but seldom called upon to perform difficult operations in surgery, and have but few opportunities for observation and practice in that line. A practitioner of that class is bound to possess such skill only as physicians and surgeons of ordinary ability practicing in similar localities, and enjoying like opportunities, commonly have.

The Revision of the Pharmacopœia.—The instructions issued by the sixth Decennial Convention for the Revision of the United States Pharmacopœia to the Committee of Revision and Publication are as follows: I. General Principles to be followed—1. *Language.*—The text of the U. S. Pharmacopœia is to be written in the English language; but the titles of the officinal substances and preparations are to be given, as heretofore, both in Latin and English. 2. *Alphabetical Arrangement.*—The present division into "Materia Medica" (comprising a Primary and Secondary List) and "Preparations" is to be abolished, and all articles are to be arranged in a continuous alphabetical order, retaining, however, such headings as Extracta, Extracta Fluida, Decocta, Infusa, etc., wherever it may be found useful to give general directions referring to the whole class. At the same time all formulæ for the preparation of the single members of each class shall be made complete in themselves. 3. *Synonyms.*—The different headings shall be accompanied, in a manner not interfering with the perspicuity of the text of the formulæ, by a list of synonyms in common use. 4. *Cross-References.*—At the end of each article a short paragraph is to be added, giving the names of all the preparations into which the substance or preparation treated of in the article enters. 5. *Descriptions of Crude Drugs.*—To all crude drugs, of animal or vegetable origin, concise but complete descriptions are to be added, sufficient to indicate the distinctive characteristics visible to the naked eye, and, when necessary, such as are visible under an ordinary good pocket lens, magnifying about ten diameters. Where external and visible properties are insufficient to properly characterize the substance (as in the case of gums, resins, balsams, etc.), it shall be further defined by its physical and chemical properties. The botanical names of plants shall be accompanied by the name of the author, but all therapeutical discussion shall be omitted. 6. *Descriptions of Chemicals.*—All mineral substances or chemical preparations, except those where differences in process produce different results, are to be described and defined by concise and complete tests of identity and purity, without giving processes. Processes for the preparation of morphia, quinia, and the other alkaloids are to be omitted, but the articles "Opium" and "Cinchona" shall be accompanied with detailed processes of assay for the alkaloids; and the minimum percentage of total alkaloids to be required in cinchona and the minimum and maximum percentage of morphia in opium shall be prescribed in the Pharmacopœia. (N. B. A resolution was adopted that the Committee of Revision consider with great care the words used in the preceding section.) 7. *Chemical Formulæ.*—All chemicals of a definite composition should have their primary rational [thus: Acetic Acid: $HO, C_4H_3O_3$; $\mathbf{HC_2H_3O_2}$.] formula added, both according to the old and to the new notation, together with their atomic or molecular weights. The formulæ according to the new nomenclature should be distinguished by prominent type. 8. *Processes for Chemicals.*—In the case of those chemical preparations where different processes yield different results, the process to be followed in each case shall be described in detail. 9. *Parts by Weight.*—All measures of capacity shall be abandoned, and quantities shall be expressed in *parts by weight;* except that, in the matter of fluid extracts, the Committee of Revision and Publication shall have authority to adopt such process or processes as shall seem to it best. 10. *Formulæ of Preparations at Present officinal.*—*a.* All such tinctures, wines, etc., in which a slight variation of dose is of no importance, are to be made as nearly as possible of a uniform percentage strength; that is, one part of the drug is to be made into five parts of tincture, etc., or into ten parts of tincture, as the case may be. *b.* In the case of highly active preparations, as *tinctura aconiti radicis, tinct. nucis vomicæ, tinct. opii, tinct. veratri viridis*, the present strength is to be as nearly as possible retained; but in the liquid opium preparations, excepting paregoric, the strength of ten per cent. shall be adopted, if found advisable. 11. *Numerical Relation of Quantities.*—The quantities, or parts by weight, of the ingredients entering into a composition, are to be expressed in the simplest possible terms, and, whenever possible, in a centesimal ratio. 12. *Temperature* shall be expressed both in degrees of centigrade and in degrees of Fahrenheit, thus: 00° C. (= 00° F.) 13. *Definitions of Physical Properties.*—Varieties and degrees of color, consistence, transparency, fineness of powders, etc., shall be as closely defined as possible. 14. *Specific Gravity.*—A uniform method for taking the specific gravity of liquids shall be prescribed. 15.—*Definite Expressions of Weight.*—Whenever it is necessary to employ definite expressions of weight, as, for instance, when it is directed that a pill mass is to be divided into pills containing a certain weight of one or more constituents, this weight is to be expressed both in metrical and in apothecaries' weight. 16. *Weight of Finished Product.*—In those formulæ (for syrups, infusions, elixirs, etc.) in which fixed quantities of ingredients are didirected to be combined under circumstances which may involve a partial loss of any of the ingredients, as, for instance, where a variable amount of water may be lost by evaporation, the weight of the intended finished product should be specified, and when practicable should be brought up to 100 parts. 17. *Doses.*—All doses are to be omitted from the Pharmacopœia. 18. *Tables to be appended to the Pharmacopœia.*—*a.* List of new Additions. *b.* List of Articles dropped from the last Pharmacopœia. *c.* List of Changes of Latin officinal names. *d.* List of Changes of English officinal names. *e.* Table of Weights and Measures. *f.* Table of Solubilities of the officinal Chemicals in Water and in Alcohol, at 15·5° C. (= 60° F.), and at their boiling points. *g.* Alcoholometrical Table. *h.* Acidimetrical Tables (meaning tables of the specific gravity of acids). *i.* List of Reagents for qualitative and quantitative—including volumetric—use, of a fixed strength or dilution, and accompanied by a brief statement of their use. *k.* Table of the Elementary Substances, with their symbols, atomicity, atomic weight, etc. *l.* Weight and Volume Table. To facilitate the use of parts by weight (or, of the decimal system), in compounding, prescribing, and dispensing medicines, a table exhibiting the relationship between the weight and the measure of a given volume of any liquid preparation may be added. This should contain all the officinal liquids in alphabetical order. *m.* Table of the Specific Gravity of officinal Liquids for each degree between 10 and 25° C. (=50–77° F.) *n.* A Table comparing the Strength of powerful Galenical Preparations of foreign Pharmacopœias used in this country, with that of the corresponding Preparations of our own. *o.* A Table exhibiting the Differences in Strength of the Preparations, as made according to the present and the new U. S. Ph. *p.* A Table of Thermometric Equivalents. *r.* A Saturation Table. *s.* Any other Tables which the Committee may deem expedient. *t.* A full Index, containing all the Synonyms, should conclude the book, with marks of accent, to indicate pronunciation, as heretofore.═══ RESOLUTIONS REGARDING THE DUTIES OF THE COMMITTEE OF REVISION, AND THE DUTIES OF THE OFFICERS OF THE CONVENTION.—1. *Title of Committee.*—Resolved, that the title of Committee be: "The Committee of Revision and Publication of the Pharmacopœia of the United States of America." 2. *Vacancies.*—Resolved, that the Committee of Revision and Publication be empowered to fill its own vacancies. 3. *Dropping of Members.*—Resolved, that any member of the Committee of Revision and Publication who shall neglect to perform the duties which have been assigned to and accepted by him, without presenting to the Committee a satisfactory excuse, may be dropped from membership, and that his place be filled by a new appointment by the Committee, consent of two thirds of the entire Committee being requisite for so dropping a member. 4. *Employment of Experts.*—Resolved, that the Committee of Revision and Publication be authorized to employ skilled experts to make such trials and investigations as may be necessary to enable the Committee to pass intelligent judgment upon the details of the work before it, such trials and investigations to be made under the direction of the Committee. 5. *Publication of the Pharmacopœia.*—Resolved, that the Committee of Revision and Publication be instructed to award the publication of the United States Pharmacopœia to the publishing house offering the best terms; the Committee to hold the copyright; the price of the book to be limited, and the book to be sold through the ordinary trade channels. Action under this resolution shall require the approval of a majority of the whole Committee. 6. *Supplements to the Pharmacopœia.*—Resolved, that the Committee be authorized and directed to publish a supplement at the end of five years—or oftener, if deemed expedient. 7. *Plan for the next Decennial Revision.*—Resolved, that the Committee shall report a complete plan for the revision of the Pharmacopœia at the next Decennial Convention. 8. *Turning over Papers to next Convention.*—Resolved, that the Committee of Revision and Publication be instructed to turn over to the Convention of 1890 all the papers relative to their proceedings. 9. *Calling the Convention of 1890.*—Resolved, that the President of this Convention shall, on or about the first day of May, 1889, issue a notice requesting the several incorporated medical societies, the incorporated medical colleges, the incorporated colleges of pharmacy and incorporated pharmaceutical societies throughout the United States, and the American Medical and American Pharmaceutical Associations, to elect a number of delegates, not exceeding three, and the Surgeon-General of the Army, the Surgeon-General of the Navy, and the Surgeon-General of the Marine-Hospital Service, to appoint each not exceeding three medical officers, to attend a general Convention for the Revision of the Pharmacopœia of the United States, to be held in Washington, D. C., on the first Wednesday of May, 1890. Resolved, that the several bodies, as well as the medical departments of the Army, Navy, and Marine-Hospital Service thus addressed, shall also be requested by the President to submit the Pharmacopœia to a careful revision and to transmit the result of their labors, through their delegates, to the Committee of Revision at least three months before the next meeting of the Convention. Resolved, that the several medical and pharmaceutical bodies shall be further requested to transmit to the President of this Convention the names and residences of their respective delegates, as soon as they shall have been appointed, a list of whom shall be published, under his authority, for the information of the medical public, in the newspapers and medical journals, in the month of March, 1890. 10. *Providing for Succession to the President, in case of his Death, Resignation, or Inability to act.*—Resolved, that, in the event of the death, resignation, or inability of the President of the Convention to act, these duties shall devolve, successively, in the following order of precedence: upon the Vice-Presidents, the Secretary, the Assistant Secretary, and the Chairman of the Committee of Revision and Publication of the Pharmacopœia.

ARMY INTELLIGENCE.—*Official List of Changes of Stations and Duties of Officers of the Medical Department, United States Army, from April 14, 1881, to May 13, 1881.*—KING, WM. S., Colonel and Surgeon. His extension of leave of absence on account of sickness, granted him November 9, 1881, from A. G. O., still further extended six months on account of sickness. S. O.

105, A. G. O., May 7, 1881. ==== McParlin, T. A. His promotion to Assistant Medical Purveyor, with the rank of Lieutenant Colonel—vice Cooper, deceased—confirmed by the Senate, May 10, 1881. ==== Bache, D., Major and Surgeon. Relieved from duty in Department of California, to proceed to Philadelphia, Pa., and report by letter, on arrival, to the Surgeon General. S. O. 104, C. S., A. G. O. ==== Bache, D., Major and Surgeon. Granted leave of absence for one month on surgeon's certificate of disability, to take effect as soon as a medical officer reports for duty at Benicia Arsenal and Barracks. S. O. 62, Division of the Pacific and Department of California, April 16, 1881. ==== Greenleaf, Charles R., Major and Surgeon. To report to Superintendent, General Recruiting Service, to conduct a detachment of recruits to Department of Dakota; and on completion of this duty to join his station (Fort Shaw, Montana Territory). S. O. 95, A. G. O., April 26, 1881 ==== McClellan, Ely, Major and Surgeon. When relieved by Assistant Surgeon Ebert, to repair to these Headquarters for assignment to duty. S. O. 44, Department of the Columbia, April 5, 1881. ==== McClellan, Ely, Major and Surgeon. To report to the Medical Director of the Department for duty until further orders. S. O. 56, Department of the Columbia, April 26, 1881. ==== Hartsuff, A., Major and Surgeon. Relieved from duty in Department of the East, to take effect June 1, 1881; then to report in person to Commanding General, Department of the Missouri, for assignment to duty. S. O. 104, A. G. O., May 6, 1881. ==== Middleton, J. V.. D., Major and Surgeon. Relieved from duty in Department of the East, to take effect June 1, 1881; then to report in person to Commanding General, Department of the Missouri, for assignment to duty. S. O. 104, C. S., A. G. O. ==== Middleton, J. V. D., Major and Surgeon. Granted leave of absence for one month. S. O. 78, Department of the East, May 2, 1881. ==== Brown, J. M. His promotion to Surgeon with the rank of Major—vice McParlin, promoted—confirmed by the Senate, May 10, 1881. ==== Brown, J. M., Captain and Assistant Surgeon. Relieved from duty at Fort Garland, Colorado, and assigned to duty at Fort Lewis, Colorado. S. O. 86, Department of the Missouri, May 3, 1881. ==== Hubbard, Van Buren, Captain and Assistant Surgeon. Relieved from duty in Department of California, to proceed to New York City, and on arrival report by letter to the Surgeon General. S. O. 104, C. S., A. G. O. ==== Gardner, W. H., Captain and Assistant Surgeon. Relieved from duty in Department of the South, to proceed to Washington, D. C., and report in person to the Surgeon General. S. O. 104, C. S., A. G. O. ==== Caldwell, D. G., Captain and Assistant Surgeon. Relieved from duty at Fort Fred. Steele, Wyoming, and assigned to duty at Fort Sanders, Wyoming, as Post Surgeon, relieving Assistant Surgeon Kimball. S. O. 36, C. S., Department of the Platte. ==== Koerper, E. A., Captain and Assistant Surgeon. Relieved from duty in Department of the Platte, to proceed to Philadelphia, Pennsylvania, and on arrival to report by letter to the Surgeon General. S. O. 104, C. S., A. G. O. ==== Lippincott, Henry, Captain and Assistant Surgeon. Having reported at these Headquarters, is assigned to duty as Post Surgeon at Fort Niobrara, Nebraska. S. O. 36, Department of the Platte, April 29, 1881. ==== Bartholf, John H., Captain and Assistant Surgeon. When relieved by Assistant Surgeon Spencer, to proceed to Fort Laprosi, Idaho, and report for assignment as medical officer of that post, relieving Assistant Surgeon Ebert. S. O. 44, C. S., Department of the Columbia. ==== King, W. H., Captain and Assistant Surgeon. Relieved from duty in Department of Dakota, and, on expiration of his present sick leave of absence, to report by letter to the Surgeon General. S. O. 104, C. S., A. G. O. ==== Kimball, J. P., Captain and Assistant Surgeon. Assigned to duty at Fort Sidney, Nebraska, as Post Surgeon, relieving Assistant Surgeon Moseley. S. O. 36, C. S., Department of the Platte. ==== De Witt, C., Captain and Assistant Surgeon. Relieved from duty in Department of the Platte, to proceed to Philadelphia, Pa., and on arrival report by letter to the Surgeon General. S. O. 104, C. S., A. G. O. ==== Cronkhite, H. M., Captain and Assistant Surgeon. To proceed from Camp Sheridan to Fort McKinney, Wyoming, and report for duty at that post. Camp Sheridan to be discontinued May 1, 1881. G. O. 8, Department of the Platte, April 20, 1881. ==== Heizmann, Charles L., Captain and Assistant Surgeon. Relieved from duty at Vancouver Barracks, and assigned to duty as Post Surgeon at Fort Townsend, Wyoming Territory. S. O. 44, C. S., Department of the Columbia. ═══ Ainsworth, F. C., Captain and Assistant Surgeon. Assigned to temporary duty at the post of San Antonio, Texas. S. O. 56, Department of Texas, April 11, 1881. ═══ Havard, V., Captain and Assistant Surgeon. Relieved from duty at Presidio del Norte, to proceed to Fort Concho, Texas, await there the arrival of Captain Livermore, Corps of Engineers, and report to him by letter. S. O. 63, Department of Texas, April 28, 1881. ═══ Moseley, E. B., Captain and Assistant Surgeon. Assigned to duty as Post Surgeon at Fort Fetterman, Wyoming Territory. S. O. 36, C. S., Department of the Platte. ═══ Maus, L. M., Captain and Assistant Surgeon. Relieved from duty in Department of Dakota, to proceed to Washington, D. C., and report in person to the Surgeon General. S. O. 104, C. S., A. G. O. ═══ Reed, W., Captain and Assistant Surgeon. Relieved from duty at Fort Henry, Maryland, and to report to the Commanding Officer United States Barracks, D. C., for duty at that post. S. O. 76, Department of the East, April 29, 1881. ═══ Shannon, W. C., Captain and Assistant Surgeon. Now awaiting orders in New York City, to report in person to Commanding General Department of the Platte for assignment to duty. S. O. 104, C. S., A. G. O. ═══ Spencer, William G., Captain and Assistant Surgeon. When relieved by Assistant Surgeon Heizmann, to proceed to Fort Cœur d'Aleric, Idaho, and report for assignment as medical officer of that post. S. O. 44, C. S., Department of the Columbia. ═══ Shufeldt, R. W., First Lieutenant and Assistant Surgeon. Relieved from duty in Department of the Platte, to proceed to Washington, D. C., and report in person to the Surgeon General. S. O. 104, C. S., A. G. O. ═══ Cunningham, T. A., First Lieutenant and Assistant Surgeon. Now awaiting orders at Danville, Virginia, to report to Commanding General, Department of the South, for assignment to duty. S. O. 104, C. S., A. G. O. ═══ Perley, H. O., First Lieutenant and Assistant Surgeon. Relieved from duty in Department of Dakota, to proceed to Detroit, Michigan, and report, on arrival, by letter, to the Surgeon General. S. O. 104, C. S., A. G. O. ═══ Burton, H. G., First Lieutenant and Assistant Surgeon. Relieved from duty at Fort Niagara, New York, and assigned to temporary duty at Fort Wadsworth, New York Harbor. S. O. 78, C. S., Department of the East. ═══ Biart, V., First Lieutenant and Assistant Surgeon. So much of paragraph 1, S. O. 205, September 24, 1880, from A. G. O., as relates to him, is revoked. S. O. 94, A. G. O., April 25, 1881. ═══ Cochran, J. J., First Lieutenant and Assistant Surgeon. Relieved from duty at Fort Lewis, Colorado, and assigned to duty at Fort Garland, Colorado. S. O. 86, C. S., Department of the Missouri. ═══ Ebert, R. G., First Lieutenant and Assistant Surgeon. Instructions by telegraph of this date, to proceed to Fort Laprosi, Idaho, and relieve Surgeon McClellan as medical officer of that post, temporarily, confirmed. When relieved by Assistant Surgeon Bartholf, to rejoin proper station, Fort Walla Walla, Wyoming Territory. S. O. 44, C. S., Department of the Columbia. ═══ Arthur, William H., First Lieutenant and Assistant Surgeon. To report in person to the Commanding Officer at Fort Sanders, Wyoming Territory, for duty. S. O. 31, Department of the Platte, April 16, 1881. ═══ Bushnell, G. E., First Lieutenant and Assistant Surgeon. To proceed to Fort Yates, Dakota Territory, and report to the Commanding Officer of that post for duty. S. O. 81, Department of Dakota, May 6, 1881. ═══ Birmingham, H. P., First Lieutenant and Assistant Surgeon. To proceed to Fort Riley, Kansas, and report to Major E. B. Beaumont, Fourth Cavalry, for duty with troops about to take the field in Colorado. S. O. 90, Department of the Missouri, May 7, 1881. ═══ Wyeth, M. C., First Lieutenant and Assistant Surgeon. Assigned to duty at Fort Meade, Dakota. S. O. 61, Department of Dakota, April 11, 1881. ═══ Cooper, George E., Lieutenant-Colonel and Assistant Medical Purveyor. Died at San Francisco, California, April 13, 1881.

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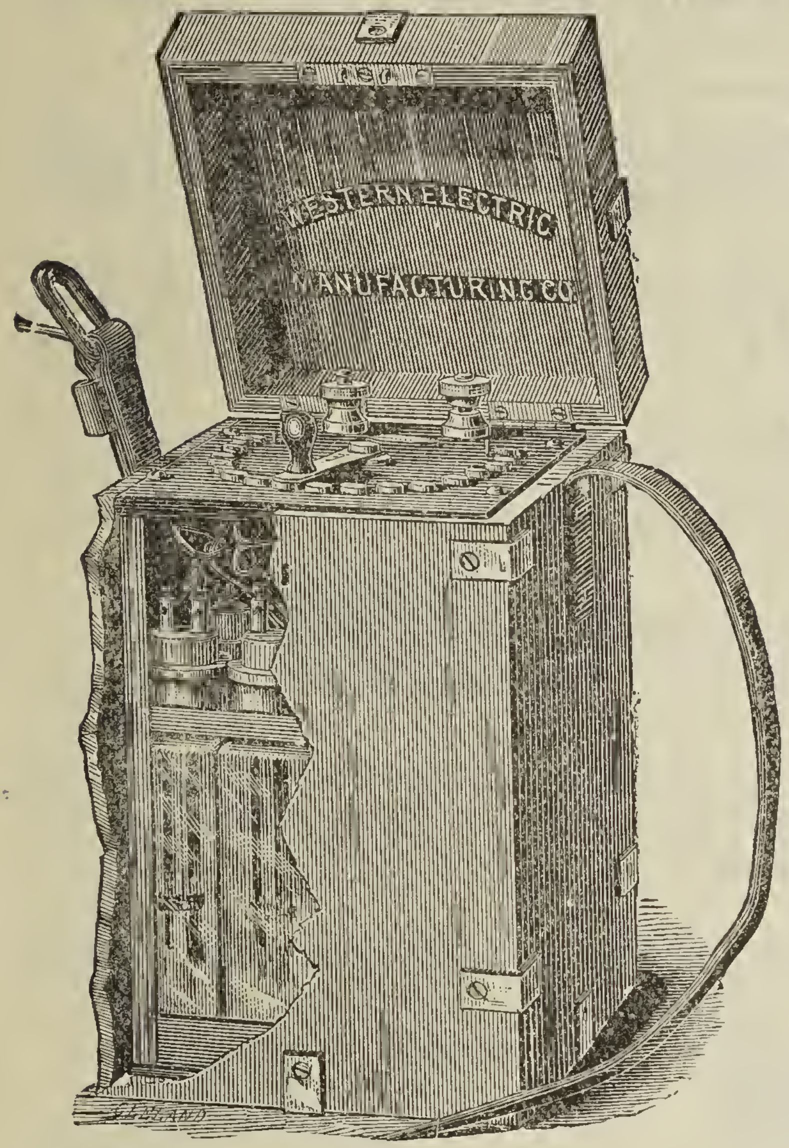

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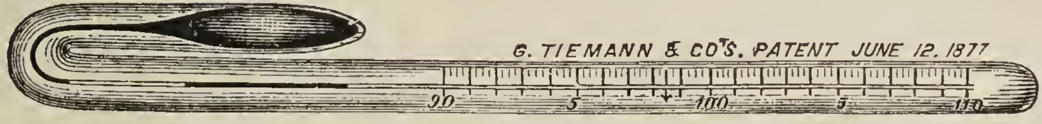
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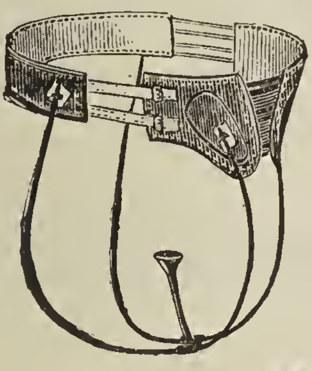

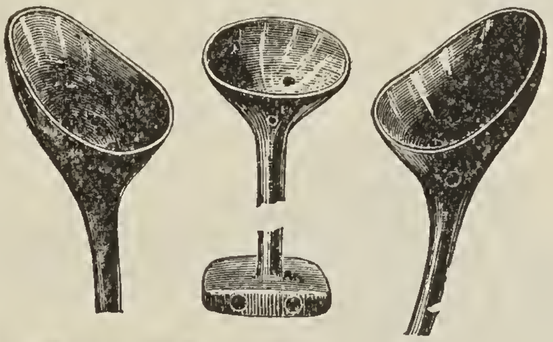

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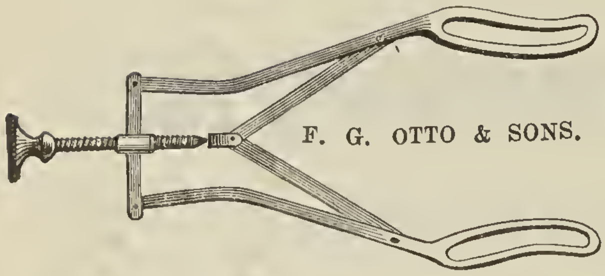
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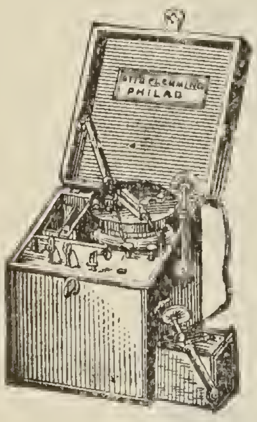

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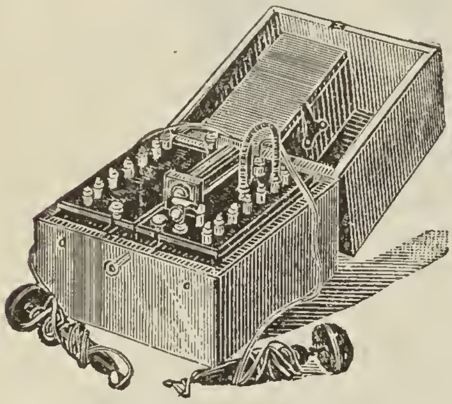

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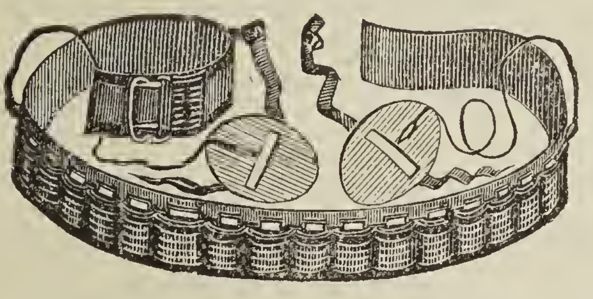

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THE COLLEGIATE YEAR in this Institution embraces the Regular Winter Session and a Spring Session. THE REGULAR SESSION will begin on Wednesday, September 21, 1881, and end about the middle of March, 1882. During this Session, in addition to four didactic lectures on every week-day except Saturday, two or three hours are daily allotted to clinical instruction. Attendance upon two regular courses of lectures is required for graduation. THE SPRING SESSION consists chiefly of recitations from Text-Books. This Session begins about the middle of March and continues until the middle of June. During this Session, daily recitations in all the departments are held by a corps of examiners appointed by the Faculty. Short courses of lectures are given on special subjects, and regular clinics are held in the Hospital and in the College building.

FACULTY.

ISAAC E. TAYLOR, M. D.,
Emeritus Professor of Obstetrics and Diseases of Women and Children, and President of the Faculty.

JAMES R. WOOD, M. D., LL. D.,
Emeritus Professor of Surgery.

FORDYCE BARKER, M. D., LL. D.,
Professor of Clinical Midwifery and Diseases of Women.

BENJAMIN W. McCREADY, M. D.,
Emeritus Professor of Materia Medica and Therapeutics, and Professor of Clinical Medicine.

AUSTIN FLINT, M. D.,
Professor of the Principles and Practice of Medicine and Clinical Medicine.

W. H. VAN BUREN, M. D., LL. D.,
Professor of Principles and Practice of Surgery, and Clinical Surgery.

LEWIS A. SAYRE, M. D.,
Professor of Orthopedic Surgery and Clinical Surgery.

ALEXANDER B. MOTT, M. D.,
Professor of Clinical and Operative Surgery.

WILLIAM T. LUSK, M. D.,
Professor of Obstetrics and Diseases of Women and Children, and Clinical Midwifery.

A. A. SMITH, M. D.,
Professor of Materia Medica and Therapeutics, and Clinical Medicine.

AUSTIN FLINT, Jr., M. D.,
Professor of Physiology and Physiological Anatomy, and Secretary of the Faculty.

JOSEPH D. BRYANT, M. D.,
Professor of General, Descriptive, and Surgical Anatomy.

R. OGDEN DOREMUS, M. D., LL. D.,
Professor of Chemistry and Toxicology.

EDWARD G. JANEWAY, M. D.,
Professor of Diseases of the Nervous System, and Clinical Medicine, and Assistant Professor of Principles and Practice of Medicine.

PROFESSORS OF SPECIAL DEPARTMENTS, Etc.

HENRY D. NOYES, M. D.,
Professor of Ophthalmology and Otology.

EDWARD L. KEYES, M. D.,
Professor of Cutaneous and Genito-Urinary Diseases.

JOHN P. GRAY, M. D., LL. D.,
Professor of Psychological Medicine and Medical Jurisprudence.

FREDERIC S. DENNIS, M. D., M. R. C. S.,
Professor Adjunct to the Chair of Principles and Practice of Surgery.

WILLIAM H. WELCH, M. D.,
Professor of Pathological Anatomy and General Pathology.

J. LEWIS SMITH, M. D.,
Clinical Professor of Diseases of Children.

ERSKINE MASON, M. D.,
Clinical Professor of Surgery.

JOSEPH W. HOWE, M. D.,
Clinical Professor of Surgery.

LEROY MILTON YALE, M. D.,
Lecturer Adjunct on Orthopedic Surgery.

BEVERLY ROBINSON, M. D.,
Lecturer on Clinical Medicine.

FRANK H. BOSWORTH, M. D.,
Lecturer on Diseases of the Throat.

CHARLES A. DOREMUS, M. D., Ph. D.,
Lecturer on Practical Chemistry and Toxicology, and Adjunct to the Chair of Chemistry.

FREDERIC S. DENNIS, M. D., M. R. C. S.,
WILLIAM H. WELCH, M. D.,
Demonstrators of Anatomy.

FACULTY FOR THE SPRING SESSION.

FREDERICK A. CASTLE, M. D.,
Lecturer on Pharmacology.

WILLIAM H. WELCH, M. D.,
Lecturer on Pathological Histology.

CHARLES A. DOREMUS, M. D., Ph. D.,
Lecturer on Animal Chemistry.

T. HERRING BURCHARD, M. D.,
Lecturer on Surgical Emergencies.

ANDREW R. ROBINSON, M. D., L. R. C. P. & S.
Edinburgh. Lecturer on Normal Histology.

CHARLES S. BULL, M. D.,
Lecturer on Ophthalmology and Otology.

FEES FOR THE REGULAR SESSION.

Fees for Tickets to all the Lectures, Clinical and Didactic	$140 00
Fees for Students who have attended two full courses at other Medical Colleges, and for Graduates of less than three years' standing of other Medical Colleges	70 00
Matriculation Fee	5 00
Dissection Fee (including material for dissection)	10 00
Graduation Fee	30 00

No Fees for Lectures are required of Graduates of three years' standing, or of third-course Students who have attended their second course at the Bellevue Hospital Medical College.

FEES FOR THE SPRING SESSION.

Matriculation (Ticket valid for the following winter)	$ 5 00
Recitations, Clinics, and Lectures	35 00
Dissection (Ticket valid for the following winter)	10 00

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address Professor Austin Flint, Jr., Secretary, Bellevue Hospital Medical College.

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